Appendix D

Public Written Comments

The following table provides an index to the Public Written Comments provided during the comment period.

Number	Commenter	Date Received	Organization
1	David J. Tonjes	8/26/2019	Citizen
2	Jennifer Cameron	8/27/2019	Citizen
3	John A. Gladys	8/29/2019	Citizen
4	Stephen Martin	9/2/2019	Citizen
5	Paulette Martin	9/3/2019	Citizen
6	Richard Murdocco	9/4/2019	Citizen/The Foggiest Idea
7	Vincent Amato	8/30/2019	Citizen
8	Tom Distefano	9/5/2019	Citizen
9	Hope Olinsky	9/2/2019	Citizen
10	Robin Appel	9/5/2019	Citizen
11	Adeline & Gary Kuhnle	9/6/2019	Citizen
12	Philip De Noto	9/7/2019	Citizen
13	Joseph Sassone	9/7/2019	Citizen
14	Natalie Allegato	9/9/2019	Citizen
15	John D. Cameron, Jr., P.E.	9/5/2019	Long Island Regional Planning Council
16	Pablo & Laura Martin	9/6/2019	Citizen
17	Steve Perry	9/4/2019	Citizen
18	Roy Reynolds	9/4/2019	Citizen
18a	Roy Reynolds	9/13/19 Addendum to 9/4/19 Comments	Citizen

Number	Commenter	Date Received	Organization
19	Alexander Zaltsman	9/10/2019	Citizen
20	Josette Perciballi	9/10/2019	Citizen
21	Elyse Rockowitz	9/10/2019	Citizen
22	Mark Krichever	9/9/2019	Citizen
23	Ryan Tappero	9/11/2019	Citizen
24	Jim Mangelli	9/10/2019	Citizen
25	Robert J. Angelo	9/9/2019	Citizen
26	Nancy Hawkins	9/12/2019	Citizen
27	Stewart McMullan	9/13/2019	Citizen
28	Javier E. Laureano, PhD	9/13/2019	US Environmental Protection Agency
29	Edna Giffen	9/13/2019	Citizen
30	Deborah Keller	9/15/2019	Citizen
31	Jim Klein	9/15/2019	Citizen
32	Harold Moskowitz	9/14/2019	Citizen
33	Vincent Rugnetta	9/15/2019	Citizen
34	Jim Soviero	9/14/2019	Citizen
35	Deborah Sorento	9/13/2019	Citizen
36	Ginger Johnson	9/14/2019	Citizen
37	Chris Klassert	9/13/2019	Citizen
38	Nicholas Valkenburg	9/16/2019 updated 10/13/2019	Water for Long Island
39	Jefferson Murphrees	9/5/2019 updated 9/16/2019	Town of Riverhead
40	Kyle Collins	9/16/2019 with correction	Town of Southampton
41	Karen Blumer	9/16/2019	Open Space Council
42	John Tanacredi	9/16/2019	Professor of Molloy College

Appendix D Public Written Comments

Number	Commenter	Date Received	Organization
43	Ruth Andrews	9/13/2019	Citizen
44	Tracey Brown	10/8/2019	Save The Sound
45	Robert M. Wemyss	10/6/2019	North Shore Baymen's Association for the Public Trust
46	Harold Moskowiz	10/9/2019	Citizen
47	Roy Reynolds	10/12/2019	The Ad Hoc Group Water Quality in Suffolk County
48	Steve Abramson	10/10/2019	Mill Pond Association
49	Steve Keegan	10/16/2019	Baywood Property Owners Association
50	John Turner	10/16/2019	Seatuck Environmental Association
51	Tor Vincent	10/11/2019	Citizen
52	Roger Tollefsen Robert Nuzzi	10/12/2019	Citizens
53	Mitch Palley	9/6/19	Long Island Builders Institute
54	Adrienne Esposito Kevin McDonald Dick Amper Bob Deluca	10/16/2019	The Long Island Clean Water Partnership

Comments on the Suffolk County Subwatersheds Plan and associated DGEIS

Submitted by:

David J. Tonjes
48 Oakwood Rd.
Huntington, NY 11743

The current plan depends upon four premises:

1) Nitrogen is the cause of ecosystem malfunctions in Long Island waters
2) If N is the cause, then residential septic systems are the reason for the problem
3) If residential septic N inputs are the cause of problem, then implementing the current alternative septic technologies will result in an ecological turnaround.
4) Given alternative environmental problems and uncertainties, $4B is a reasonable investment of public resources.

Issue 1. The role of nitrogen in the changed state of LI's estuaries

Nitrogen comprises approximately 80% of the atmosphere, but N_2 is not available to organisms. Dinitrogen is chemically and biologically transformed in nature by the microbially mediated processes of fixation, assimilation, mineralization, nitrification, and denitrification. Nitrogen is an essential component of proteins, DNA, and RNA, and is required by all living organisms (Campbell and Reece 2005). Reactive N enters the biosphere by atmospheric deposition (primarily precipitation) or through fixation. Biologic N-fixation occurs when symbiotic bacteria, aerobic bacteria, or cyanobacteria convert N_2 to NH_3. Most soils have excess H^+ that combines with the NH_3 to form ammonium (NH_4^+) which can then be used by plants or other soil organisms during the process of assimilation (Smith and Smith 2000). Ionization of ammonia in water is controlled by pH, with greater ionization associated with more acidic water (Duff and Triska 2000). Mineralization (decomposition) is the process by which organic N is converted back to its inorganic form when decomposers consume dead organisms. During nitrification, bacteria convert NH_4^+ to NO_3^- in the presence of O_2. Unlike the aerobic process of nitrification, denitrification is an anaerobic reaction and takes place in the absence of O_2. Denitrifying bacteria convert NO_3^- back to N_2 (Smith and Smith 2006). Once this transformation

occurs, the N is no longer biologically available and returns to the atmosphere as N_2 (Birgand et al. 2007).

Human activities have increased reactive N inputs tremendously. Food production is one cause. Rice was grown in paddies beginning 7,000 years ago, which increased N-fixation by anaerobic cyanobacteria. Beginning 6,500 years ago, legume cultivation increased (legumes fix atmospheric N), making more N available for uptake by other crops. Soybeans were first grown approximately 3,000 years ago – soybeans also fix N. Guano islands were mined to provide additional fertilizer inputs in the 1800s, which is more of an N mobilization process than an increase in biologically available N. In 1913, the Haber-Bosch process was used to combine atmospheric N with hydrogen gas (from petroleum feedstocks), creating NH_3 (as an input to fertilizer and gunpowder). This reaction has become the greatest source of anthropogenic available N (Galloway et al. 2004).

The second major human fixation of N has been through combustion. Trace amounts of N in feedstocks are oxidized when fuel is burnt. Nitrogen gas can be directly oxidized if the temperature is great enough, as in internal combustion engines or industrial boilers (Galloway et al. 2004). Producing atmospheric nitrogen oxides through combustion has increased atmospheric N deposition in the past 100 years from approximately 0.5 kg ha^{-1} yr^{-1} to an average of 10 kg ha^{-1} yr^{-1} for large portions of the world (Erisman et al. 2008).

For the mid-1800s, natural N-fixation is estimated to have been approximately 250 Tg yr^{-1}. Human food cultivation at that time resulted in approximately 15 Tg yr^{-1} of additional N-fixation; fixation from combustion then is thought to have been negligible. Natural N-fixation in the mid-1990s was estimated to have decreased by approximately 5% from the mid-1800s. However, N-fixation through plant cultivation had doubled (to approximately 30 Tg yr^{-1}), N-fixation due to combustion was also approximately 30 Tg yr^{-1}, and Haber-Bosch reactions were making approximately 100 Tg N yr^{-1} available. From the mid-1800s to the 1990s, overall N-fixation rates had thus been increased by 50% (with approximately 150 Tg yr^{-1} due to anthropogenic processes) (Galloway et al. 2004). Primary agricultural products (rice and grain cereals) are not very efficient at absorbing N from soil, typically using much less than 10% of the N found in the top 20 cm of soil (Cassman et al. 2002), and one estimate is that approximately 15% of applied fertilizer N leaches to groundwater (Puckett et al. 2011), and another component

is washed off directly into streams. Therefore a great pool of available N, fixed by human activity, is not used directly by people but rather escapes into the biosphere.

The increase in biologically available N created the "nitrogen cascade" – a feedback loop that leads to each molecule of anthropogenic reactive N potentially causing effects on multiple actors and systems (Vitousek et al. 1997). Terrestrial systems appear to have a net export of nutrients to the oceans (Rabalais 2002), and the export is proportional to population in each river basin (Peierls et al. 1991). Streams and rivers, by virtue of their inherent branching structures, gather dispersed N (Alexander et al. 2007), and focus these pollutants at specific areas, often intensifying their effects. Overenrichment of N clearly causes eutrophication and subsequent extensive environmental degradation in marine environments (Rabalais 2002); two-thirds of US coastal waters are degraded from nutrient pollution (Howarth 2005).

Unimpacted freshwater ecosystems are usually perceived as being in an approximate steady state in which the N and P released as byproducts of microbial and animal metabolism sustain primary production there (Smith and Smith 2006). However, much groundwater has been affected by anthropogenic N inputs. Mean NO_3^- concentrations >25 mg L^{-1} are found in 27% of French, 40% of Italian, 47% of Spanish, 50% of German, and 61% of British groundwater systems (Keuskamp et al. 2012). In the US, for instance sampling at the same 20 stations from the 1940s to 2003 found that median NO_3^- concentrations increased from approximately 2 mg L^{-1} to 15 mg L^{-1} (Puckett et al. 2011) (these data are biased towards agricultural areas). Discharging excess nutrients into surface waters disrupts normal constraints of primary production. Phosphorus is generally considered to be the limiting nutrient in freshwater systems, but there is more consideration to treating both N and P as limiting in all aquatic systems (Rabalais 2002; Campbell and Reece 2005). Excess nutrients in lotic environments allow for increased plant and algal growth. This may block light to rooted and benthic plants. In addition, when these plants and algae die, the metabolic consumption of decomposers reduces dissolved oxygen, even to the point where aerobic organisms such as invertebrates, fish, and shellfish are no longer able to survive (Smith and Smith 2006). Harmful algal blooms are also often caused by eutrophic conditions (Heisler et al. 2008). Nitrogen additions in forested areas often lead to acidic streams due to poor acid buffering in soils; agricultural, suburban, and urban soils usually have more available base ions to buffer acid additions. Acidic streams often mobilize aluminum, which is

toxic to many fish at low concentrations (Driscoll et al. 2003). The end results are degradation and even loss of habitat (Rabalais 2002).

Long Island scientists and planners have anticipated that additional N-inputs to the LI aquatic system will negatively affect estuarine systems, as foretold in Koppleman (1978). Many experiments adding N to ecological systems, especially by the Gobler laboratory at Stony Brook University, have demonstrated that increasing N impacts plankton populations (e.g., Gobler et al. 2002; Gobler et al. 2016; and many others). Ecological catastrophe came to Long Island estuaries beginning in 1985 with continuing outbreaks of Brown Tide (Aureococcus anophagefferens), where high densities of this essentially inedible plankton have shaded rooted plants such as eelgrass causing dieoffs, starved filter feeding organisms such as scallops, and outcompeted other native LI estuarine plankton species. Increasing N concentrations can initiate and maintain Brown Tide outbreaks (Gobler et al. 2002; Gobler et al. 2005).

Yet the process of the 1985 Brown Tide initiation, with outbreaks in five separate, disparate estuarine systems in the mid-Atlantic in one summer, implies that N concentrations cannot be the only factor in the onset of Brown Tide. There is only a small probability that all five systems coincidentally exceeded a certain N threshold at the same time. The conditions that lead to
a Brown Tides occur sporadically in Long Island estuaries, as the outbreaks are not predictable, move from place to place in different parts of the Peconic and South Shore estuaries, and do not necessarily occur at the same time in similar locations. If nutrients were the primary cause, and if nutrients are increasing in LI estuaries, the tides should not be sporadic temporally and geographically. Rather, their incidence should become more common, occur in the same locations and then become more widespread, and should be much more predictable. It seems that shifts in conditions that support outbreaks occur at certain times and in particular locations, and there and then predatory controls are lacking. Brown Tide is a nutrient-supported problem, but also relates to other key ecological conditions (Gobler et al. 2005). Note well that Schindler (2012) criticizes the reliance on “bottle and mesocosm” nutrient addition experiments as means to understand eutrophication and to craft meaningful management programs, as those experimental approaches do not include slow changes in biogeochemistry cycles, sediment dynamics, and community succession. We know it is a complex problem, but the Plan does not consider any other element except N.

Ecosystems are complicated systems. Twenty years ago it was posited that returning shellfish to previous abundances would have restorative effects on LI estuaries. This proved impossible to achieve. We know that in LI estuarine waters there here have been shifts in planktonic species abundance, timing of plankton blooms, changes in fish populations, losses of shellfish, changes in pH, changes in sediment quality, continuing changes to and losses of marshes, increases and changes to stormwater runoff, and changes in temperatures. Although basic oceanographic ecological theory finds N is the limiting nutrient for marine waters, a variety of studies have found that to be simplistic (Howarth and Marino 2006). Basic oceanographic theory also finds that coastal estuaries are "eutrophic" – overall not nutrient limited but rather light limited. To assume that one variable is responsible for the changes in Long Island ecosystems is not reasonable. It is likely that a variety of factors are causative agents of one kind or another. Some of these are probably well beyond our ability to manage, although at some level human actions have caused their importance in the effect. Finding N to be <u>the cause</u> of impairments, and therefore assuming that reducing its inputs will resolve the problem, is too simplistic a conclusion. Nitrogen is a pernicious problem but not the only problem in the LI marine systems.

A very recent article on eutrophication impacts in fresh and coastal waters (Ibanez and Penuelas 2019) underscores, for instance, the role of phosphorus (P) in ecological impacts and some recent impact mitigation. Certainly P has historically been found to drive eutrophication in fresh water systems, especially ponds and lakes (a secondary but important concern of the Plan). Agricultural loading limits, P-removal from sewage treatment plants, and phosphate-free detergents are touted as means of reducing P inputs to aquatic systems, and seem to have resulted in some ecological recoveries (Hilt et al. 2011), But the Plan does not address the issue of P inputs, focusing solely on N. b

It was disappointing to see the Figures 1.5 graphs presented pages 1-11 to 1-14 in the draft Plan, showing changes in measured estuarine N concentrations over the past decade. The rules of linear regression state that data points need to be evenly distributed over the x-axis, something Figures a and b clearly violate; this means the trend lines for these figures are not well grounded. In addition, although different sampling points in water bodies have different N dynamics and differing ranges of N concentrations, all of the data taken across each water body were simply lumped together. I have personal knowledge that not all stations are sampled each sampling event, meaning the data could be biased because certain stations are more represented than c

others. In addition, the presented data clearly show great variability. The trend line for each graph is quantified, but the Plan does not report whether the upwards trending lines are statistically significantly different from 0. In addition, the amount of variability accounted for by the data (usually measured by the R^2 statistic in a regression) is not presented (but clearly would not be large for these graphs). This strongly suggests that the time trend is not an important driver for these data. Gobler et al. (2006), for instance, discusses N concentration dynamics over seasons and distance in Long Island Sound, and highlights the importance of nutrient uptake by plankton in determining water column concentrations. If single stations were represented in the graphs, and we were certain the biological uptake was constant (or fairly consistent over the time series), then the graphs might have some meaning. However, since this is not the case, the graphs as presented here have little scientific validity.

Because the biological component of the system is such a driver of measured N concentrations and is so variable, it makes it close to impossible to model the fate of N from land to estuary, making analyses of the relationship between N inputs and ambient N fraught. The Long Island Sound Study, for instance, to measure the effectiveness of its programs limiting N inputs to Long Island Sound, does not present N concentration; instead it uses indirect measures of the impact of N (such as bottom dissolved oxygen concentrations). The Plan itself proposes to use such kinds of measures to determine its overall effectiveness; presenting information on long-term changes in hypoxia extent or eelgrass areas would be the kind of information the Plan should use to justify action, therefore.

This is not to deny N's potential for environmental and human health impacts, although LI groundwater N concentrations rarely fail the 10 mg/L health-based drinking water guideline. This is a testament to the strict enforcement of regulations by SCDHS to limit human waste release impacts to the aquifers, regulations created to be in line with the 208 Plan and other, similar guidances. Removing a potential harmful substance from environments where it was disposed is probably a good thing, and generally is sound environmental public policy. But the question is: how much should we spend and how much effort should we make if it is not going to have a consequential, identifiable benefit for us? The endpoint of the Plan is to restore Long Island's estuaries: however, science is inconclusive (at best) at the <u>causal role</u> of N in overall system impairment.

Issue 2. If Nis the cause of the problem, residential septic systems are the cause of excessive N in groundwater (and streams) and so in the estuaries.

Stream water quality reflects shallow (Upper Glacial aquifer) (UG) water quality (all LI streams are groundwater-fed). A non-random survey of UG wells by SCDHS, informally called the Robbins report because it was accomplished by Cy Robbins, found N concentrations increasing from the 1980s to the 2000s. This was attributed to increasing population and increasing use of domestic septic systems. Similarly, the Valiela model of the South Shore estuary found residential septic to be the dominant N input (55%) to the estuary (Kinney and Valiela 2011).

But, the Valiela model is terrible (even though it was published in a peer-reviewed journal). It does not include the deep-recharge zones and Magothy aquifer (and so has N source areas that are 1/3 too great); it uses a single land use description (1990) that does not account for older groundwater water quality (deeper UG) determined by a farm-dominated economy between the wars and even into the 1960s and 1970s in eastern Islip and Brookhaven; it ignores continuing population increases in the 1990s and 2000s that could change the source of N in the shallower UG (Kinney and Valiela 2011). The model is based on a Cape Cod model that had a "validated overall error rate of 22%" (Valiela et al. 2000), which is not bad except the target reduction is 50-75% (so that the potential model error is a substantial portion of the expected result). The model also invokes a ridiculous water table N reduction of 50%, which is never feasibly explained (Pabich et al. 2001). If the model characterizes N sources correctly it is only by chance.

SCDHS groundwater sampling data generally show that agriculture results in groundwater N concentrations 3x that of medium density residential, 5-8x low density residential, and 50% greater than high density residential. The switch from farmland to residential development should result in significant decreases in groundwater N concentrations – although changing from undeveloped land to residential land should result in large increases in N.

Let's use these concepts to develop a very simple model of groundwater N inputs. Instead of e determining exact inputs to the system (and having to determine denitrification and uptake rates), we'll just assign a loading factor, relative to the concentrations that SCDHS has found to result from the activity. Thus, farmland has a relative loading factor of 12, high density residential land use a loading factor of 8, medium residential density a loading factor of 4, and low density a

factor of 2. In 1950, ~20% of Suffolk County was farmland; currently it is 6% (Suffolk County Department of Economic Development and Planning, 2015). Residential development is trickier to track. Currently, 38% of Suffolk County acreage is residential development (for a population of ~1.5 million) (Suffolk County Department of Economic Development and Planning, 2018). Residential land use in 1966 was ~16% (for a population of ~950,000) (estimated by linear interpolation from the 1960 and 1970 census data) meaning the density of residential development was greater in 1966. If we assume the change in residential density was trended similarly back to 1950, that implies the 276,000 residents of the County in 1950 occupied only about 22,000 acres – a much higher residential density than today (think of Levittown type developments not Garden City type suburbia, and living "downtown" in villages). The relative N inputs in 2016 from agriculture and residential sources according to this very simple model was about 1.56 million N units. If we use the same agricultural loading factor for a much greater 1950 agricultural acreage and use a N loading factor of 6 for the denser but much fewer residential acres of 1950, the model N-loading can be estimated to have been 1.57 million N-units – approximately the same.

The Robbins groundwater data analysis suggests otherwise, that N concentrations (and so presumably, N loadings) have been increasing over time; but those wells were not evenly distributed across the County. The sample data Robbins used were taken from homes that existed in the 1980s and still used their own well water in the 2000s: this set of data is biased heavily towards the eastern portion of the County where vacant land (not farmland) was converted to housing (eastern County farmland tended to stay farmland, at least in comparison to conversion proportions in western parts of the County, which is why most preserved farms are in the east). Thus the Robbins data set may be too biased to serve as good measure of water quality trends. And please note the only SCWA wells that have been taken from service due to high N concentrations are those affected by agriculture (such as the Middleville well cluster).

We can add to this simplistic model, assigning vacant land a loading factor of 1 (the groundwater N concentration commonly assumed to result from precipitation, although this may be an overestimate) and all other development (industry, roads, commercial areas, golf courses and parks, etc.) a factor of 2 (because people always add N to the system). Doing so means that the current input from residential development is about 50% of the relative N-input (current agriculture is a little less than about 20%, all other land use about a third). If we subtract out the

precipitation input (assuming it to be an even relative factor of 1 across all Suffolk County), then the current residential septic input (lawn fertilizers, too) is about 40% of the overall inputs to the groundwater system.

The watershed plan made a tremendous, much more sophisticated effort to model N concentrations. The effort is flawed along the same conceptual lines as the Valiela model. There is a failure to consider temporal changes in N inputs, which if the County's assumptions about agricultural impact are true, are very important. Bad assumptions are made regarding the County-wide flow model: it is "downloaded" to fit subwatershed modeling – this is the mistake Valiela made with his Cape Cod model, where overall errors of 22% for the entire model were greater (and often much greater) for six of eight subwatersheds (see the table just below) (Valiela et al. 2000). The area with the greatest percent errors is one of the smallest watersheds; this is because parameterization errors (using global values for key factors like hydraulic conductivity) balance out over larger areas, but amplify when wrong for smaller areas like watersheds. For instance, the geological characteristics (and therefore model parameterization) found in the vicinity of the Brookhaven landfill are not similar in all places to regional definitions (Aphale and Tonjes, 2013). f

Watershed	Model kgN/yr	Estimated kgN/yr	Difference (percent)
Childs River	5,536	8,116	+47
QuashnetRiver	8,406	9,879	+18
Eel Pond	3,029	4,502	+49
Hamblin Pond	1,661	893	-46
Jehu Pond	2,709	1,968	-27
Sage Lot Pond	361	990	+174
Head of the Bay	532	433	-19
Waquoit Bay (total)	22,000	26,761	+22

Modeled versus estimated (based on measurements) N inputs, subwatersheds on Cape Cod (Valiela et al. 2000).

The County also failed to compare model outputs to real world data. Valiela et al. (2000) compared the Cape Cod model predictions for N to shoreline point data; the Long Island version was not verified in any way, however. This is surprising because streams on Long Island serve as aggregations of local groundwater conditions (and define watersheds). Watershed groundwater data sets could be compared to a series of samples of the streams in the watersheds, therefore; the g

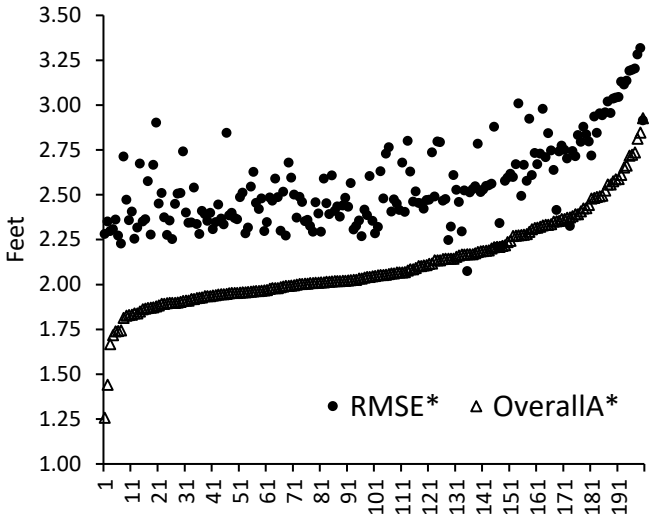
comparison might only serve to relatively compare model output to actual data, because the stream-concentration data should be less than predicted groundwater data because of hyporheic zone denitrification and nutrient uptake in the stream (Merrill and Tonjes 2014). But it would provide some form of conceptual check on the model, and if there were some consistency in the differences it would give us more confidence in the model outputs.

I have much experience working with County environmental scientists, especially on groundwater issues. The County usually approaches groundwater issues in a much more sophisticated, nuanced fashion. For site-specific contamination studies, the County almost always only relies on the County model or groundwater flow maps for general guidance, understanding that local information is needed to accurately investigate sources of detected contaminants or to predict where they will flow. An illustrative exception to this practice was the compost-vegetative matter investigation (SCDHS 2016). Using only the groundwater flow maps as predictors of flow meant that the investigation missed plumes at 3 of 11 sites and only partially detected a fourth. Local conditions are only partially predictable from tools designed for larger settings.

Groundwater flows can change over time as overall conditions change. I have personal experience with two examples of this in Suffolk County. One was the tritium plume at BNL in 1997. There the plume had a surprising feature of two lobes in its general southwesterly flow. This baffled the investigators until it was recalled that a major pumping well had been turned off because it had become contaminated (by another spill at the site). Incorporating this knowledge into the conceptual model of the plume made the two foci to the plume understandable: one was formed when the well was pumping and one when the well was not. This was important, as the pumped-well lobe had higher concentrations of tritium; the second lobe had lower concentrations but continued to be fed by the release of the tritium. This second lobe became the focus of the remedial effort, which might not have been the case if it was not realized that conditions can change. The second example is from the East Hampton Landfill. I reviewed a consultant report that found diffuse contamination in all sectors north of the landfill (although more so to the northeast), although the flow of groundwater was determined to be to the northeast. The consultant absolved the landfill from responsibility for the contaminants to the northwest since it was “impossible” for the landfill to contribute contaminants there. However, this landfill has potential discharge points to Peconic Bay in two directions, into two local subembayments. If the

local groundwater high elevation were to shift slightly to the east then flow could be from the landfill to the northwest. But since it is a general practice to assign only one flow direction for local groundwater, the consultant did not entertain an alternate theory regarding flow, although this would only require a relative change in head of several feet upgradient to change the overall flow pattern; and having flow some of the time to the northwest would provide a reasonable explanation for the reported groundwater contaminant patterns. Using a static County model as a base and then downscaling it means that local changes to important flow patterns cannot be included in the Plan.

A trite saying in modeling is "garbage in, garbage out." However, because of the sparseness of data availability, in groundwater modeling we often assume that parameters can be assigned to regions we have no good information about, or we use default values because there is no information relevant to change the default. Professional judgement and some parameter fiddling are used to create one single parameter set that best explains the available data. An alternative approach is to use a "multi-model" approach. My student, Omkar Aphale, explored the Brookhaven landfill vicinity using this concept. He did not make selections for eight key model inputs but instead constructed model variants looking at possible states for all eight inputs. This created 288 different models (although 23 failed to resolve, meaning he analyzed 265 model variants). The model variant outputs were compared to actual site data. Although all of the model variants used "reasonable" parameterizations, the outputs had a relatively wide range of errors (compared to actual data), with some model choices performing much better than others (Aphale and Tonjes 2017). It doesn't require "garbage in" to produce "garbage out;" it is very difficult to determine which parameter choices will create the best performing model. Some of the models tested in Aphale and Tonjes were entirely reasonable parameter choices (all the choices were meant to be reasonable), and yet they performed poorly. And the parameters that perform best at a County wide scale are almost certainly not the parameter choices that are best for local watersheds.



Measures of error for the 265 Brookhaven landfill groundwater models (from Aphale and Tonjes 2017)

I have collected data on groundwater heads over several years near the Brookhaven landfill. Part of the monitoring included wells on Fireplace Neck, which is bracketed between Beaverdam Creek and Carmans River. The data show that the main flow of groundwater discharges into the tidal portions of the Creek and River; the groundwater under the neck itself is almost entirely isolated from the main flow (Tonjes 2015; Tonjes 2016; Tonjes 2017). The South Shore estuary is characterized by stream-canal network systems that create many such necks. My data would suggest that there is little flow through on the necks and that groundwater flow is very sluggish under them. I do not believe that this thinking is incorporated into standard understanding of the south shore groundwater flow system. But it would seem to be important in modeling flow at the very local scale as is needed for the Plan.

It is especially inappropriate to use the NLM static input approach for N inputs to groundwater systems. Valiela's group developed this concept on Cape Cod, where the distance to discharge points for the shallow aquifer are not very great. Discharge times of less than 10 years mean that no consequential changes in land uses occur that can affect N inputs; determining N inputs as a function of land use needs only to reference current land use. Long Island is different. Groundwater travel times to surface water discharge in the UG can reach 100 years; the Magothy aquifer, which was ignored by Valiela in the original adaption of the Cape Cod model to Long Island, has travel times measured in hundreds of years (Buxton and Modica 1992). This means

that to determine what loading is affecting discharges from the aquifer currently, modelers need to know something about historical land use and factor that in proportionately (and appropriately) to the age of the groundwater discharges. This is obvious to anyone with more than passing acquaintance of LI groundwater systems, and yet the current Plan continues to rely on the single land use definition approach adopted by NLM and similar loading approaches.

It is difficult for me, therefore, to understand why groundwater professionals in SCDHS made the choices they did in developing this Plan. They are well aware of issues in downscaling h
models, especially when no validation is used. Groundwater modeling requires careful selection for parameterization, and making wrong choices causes the potential for large errors. Groundwater systems are not static but careful modeling requires understanding of dynamics inflow, contaminant input, and overall system states. Although choices made by others means that the NLM model is commonly being used by many doing work on N inputs on Long Island, SCDHS was not bound by these precedents. It is clear that to produce detailed recommendations like those apparently desired by the program managers for this Plan, that extensive groundwater modeling would be required. What I don't understand is the lack of awareness of the potential for error in the Plan. Clearly the professionals working on the model must have realized that the lack of site-specific information and other constraints on data quality and verification meant that they should have little confidence in this work. Sometimes it is best to say that we lack enough information to do the things we are being asked to do, no matter how great the need for the task. Bad models are not better than no models especially when consequential decisions are at stake.

Groundwater discharge, which especially on the South Shore is dominated by discharge to streams which then discharge to the estuary, is only part of the N burden on the estuaries. Salt balances would suggest that the estuaries are comprised of ~75-90% oceanic waters, and at most
10-25% groundwater. This means that a substantial portion of N in the estuaries (10-25%) is i
imported from the ocean. There is also atmospheric deposition. The area of Great South Bay is approximately equal to its contributing watershed; in the Peconic Bay, the watershed is much smaller than the area of the estuary. This means 25% or more of N in the estuary comes from precipitation. This kind of analysis was used by Gobler to determine the N inputs for the Peconic Bay back in the early 2000s, when he thought ditched marshes were a major source of local N. Gobler's analysis found that 75% or so of Flanders Bay N came from groundwater or stream water; more open waters will have substantially higher percentages of N from oceanic circulation

and precipitation. Lloyd (2014) attributed 25% of N to atmospheric deposition (75% to land-based sources, with a 2:1 ratio of septic to fertilizer inputs) for the Peconic Estuary, but did not account for any oceanic inputs. The Suffolk County TMDL for the Peconic Estuary attributed 56% of N inputs to atmospheric deposition and 41% from groundwater (ignoring oceanic inputs and assigning other sources about 3%) (Peconic Estuary Program 2007).The estimates for inputs to the eastern bays of the South Shore Estuary were different: almost all inputs were estimated to be from groundwater. The NLM model found 65% of N-input sources was wastewater derived, and despite robust farming in the watersheds, computed relatively little (20%) from fertilizer (School of Marine and Atmospheric Sciences, 2016). But clearly, not all N in the estuaries can be attributed to septic systems: my rough estimate of current inputs was 40% of aquifer inputs (with historical estimates being much less); other authorities (across various systems) found the current value to range from 41% to 65%. Remember that the content of the aquifer is a testament to time, with water ages in the UG ranging to as much as 100 years (Buxton and Modica 1992), so that historical inputs matter.

Constructing an accurate N input model for saltwater estuaries is extremely difficult. Shallow marine sediments have always been identified in global N models as a major N sink and a setting for denitrification. Understanding of N dynamics means the transition from fresh, often anoxic groundwater to salty, oxygenated sea water results in many chemical reactions including denitrification. The water column-sediment interchange process (the hyporheic zone in freshwater systems, submarine groundwater discharge and recirculation in salt water settings) is usually thought to result in denitrification. Then there is the N uptake by biota, where the parameter of interest is growth of plankton, which is hard to measure (not the standing crop of plankton, which is easier much easier to measure). This again makes clear why presenting data on estuarine water column N concentrations (Figure 1.5 in the Plan) and then supposing there is a direct link back to source concentrations is not a very meaningful exercise.

The Plan has no good direct evidence of the role of septic N in overall groundwater N, and even less evidence of its role in N concentrations in estuarine water. Stable isotope studies of groundwater N could help separate fertilizer and atmospheric inputs, which are generally inorganic, from organic inputs (presumably from septic although animal wastes and organic decay would be included), but this work has not been done here. Instead, the County used a modeling approach that was conceptually influenced by a poor modeling framework based on

the Cape Cod work. The whole NLM model is terrible: it is based originally on single N input values haphazardly drawn from a thin literature, then adjusted by bizarre invocations of water table denitrification zones (Pabich et al. 2001). Towards the back of the Plan Appendices (I cannot be specific regarding the pages, as the Appendices are not paginated) the meeting reports included a number of criticisms regarding values selected by the County modelers for various N input terms, as well, although those criticisms do not appear to be reflected in the final modeling exercises. At a minimum, this should have meant modeling inputs with error terms—which is difficult to execute, but results in much more truthful outputs. Then the model results could have been reported as "X +/- Y" – and because of how errors propagate in models, the Y error term would have been significant, and most likely larger than the base value. This would have made it clear there is tremendous uncertainty involved in the modeling.

It is commonly parroted that "All models are wrong but some are useful" (originally attributed to George Box). Groundwater is an area where modeling is essential to create any kind of accurate depiction of conditions, because we are unable to observe groundwater directly. But groundwater models are plagued by sparse and often contradictory data sets, especially at the local level, requiring interpolations and interpretation to generate required inputs (see Aphale and Tonjes 2014). We know that the County model is wrong; the County has not taken adequate steps to address uncertainty and define the degree of error associated with its model, especially for use in local settings such as is the case for the subwatershed plan. Therefore this model cannot be relied upon – it cannot be thought to be useful except to underscore the degree of our ignorance. The County may <u>believe</u> residential septic is the primary cause of N concentrations in groundwater, but it <u>cannot prove</u> it, certainly has <u>not proven it with any certainty</u>, and certainly has <u>not demonstrated</u> that is the case against a reasonable amount of skepticism. And the relationship between groundwater N and estuarine N is a very difficult problem to address.

Issue 3. If residential septic is the cause of ecological change in the estuaries, then it can be mitigated through the use of alternative septic systems (resulting in a return to estuarine ecological health).

This argument has several interlocking pieces. One is that alternative septic systems cause important reductions in N inputs to groundwater. The second is that the scale of the reductions

will be sufficient to reverse impacts from N on the estuary. The third is that changing the current N regime will return the estuaries to some earlier, better condition.

1 Gross estimates of cesspool and septic system N removal have always been reported to be in the 33-50% range (see Koppleman 1978, for instance). More recent evidence (e.g., Costa et al. 2002 and supported in presentations by Hal Walker, original director of the NYS Center for Clean Water Technology at a "Nitrogen Bootcamp") suggest they provide more like 15-25% effective removal. However, a summary of research on more advanced systems being evaluated by the CCWT (2016) found that septic system effluent was reduced by up to 50% in the sand layer – where denitrification is not supposed to occur, because it is not the part of the advanced technology where N removal is to occur – it is where NO_3 is to be produced from NH_4. This implies that there may be some validity to higher estimates of cesspool-septic system nitrogen removal rates. Perhaps the estimates of cesspool-septic system N removal should be set at 15-50%.

It is unlikely that the carbon-poor sediments of the UG remove much nitrogen along groundwater flow paths. However, discharge points from the aquifer, either to streams or to the estuary directly, may result in denitrification. Wetlands and other riparian ecosystems are effective locations for denitrification (Merill and Tonjes 2014). Flow into the deeper Magothy aquifer results in loss of nitrogen, as the sediments contain enough carbon that long flow paths result in anoxic conditions. USGS data show generally undetectable N concentrations in the Magothy aquifer close to the shoreline (Monti and Scorca 2003).

Therefore, under current conditions, a third of Long Island does not contribute any N to the estuaries because it overlies the Deep Recharge Zone and recharge (and septic inputs) flow into the Magothy aquifer for 200 yr or more residence time and discharge as denitrified water. Houses with cesspools and septic apparently produce a baseline N reduction on the order of 15% to 50%. Some of the resulting concentrations in the UG system are further reduced at discharge points to open waters.

The alternative septic systems currently installed on Long Island are intended to remove up to 90% of septic inputs. However, their effectiveness is in question. The CCWT has not publicly posted data it has collected on these systems; a presentation was made at the 2018 Long Island Geologists where figures showed data, but these were not published in the posted abstract (Mao

et al. 2018). The data did show, as I remember, inconsistent results with much lower removal during colder months. Similar reports are found from Cape Cod (Costa et al. 2002; Heufelder et al. undated, CCWT 2016) although Florida systems seem to operate better (CCWT 2016). The Plan does not provide detailed reports on the performance of installed systems but reports 66% "effectiveness" for FAST systems, 75% effectiveness for AX systems, and 80% effectiveness for SeptiTech (my interpretations of graphically-presented data). Effectiveness could mean the percent of systems meeting the 19 mg/L discharge goal (most likely, as that is what is shown in reports like Costa et al. 2002 and Heufelder et al. undated), or it could represent the mean compliance with the removal goal (much of the CCWT data sets show final concentrations of individual systems), or it could represent the time period over which systems meet the 19 mg/L discharge goal. It is baffling that this Plan, which is premised wide implementation of a new technology, does not devote a great deal of effort to explaining the effectiveness of the systems in clear, detailed fashion. Assuming influent concentrations of about 50 mg/L, it seems reasonable to conjecture the systems mostly remove at least 60% (30 mg/L) of influent nitrogen to achieve the claimed 19 mg/L discharge goal. This means they remove about one-third to four times more N than septic systems do (removal rates of 8 mg/L associated with 15% removal and to 25 mg/L for the 50% removal rate).

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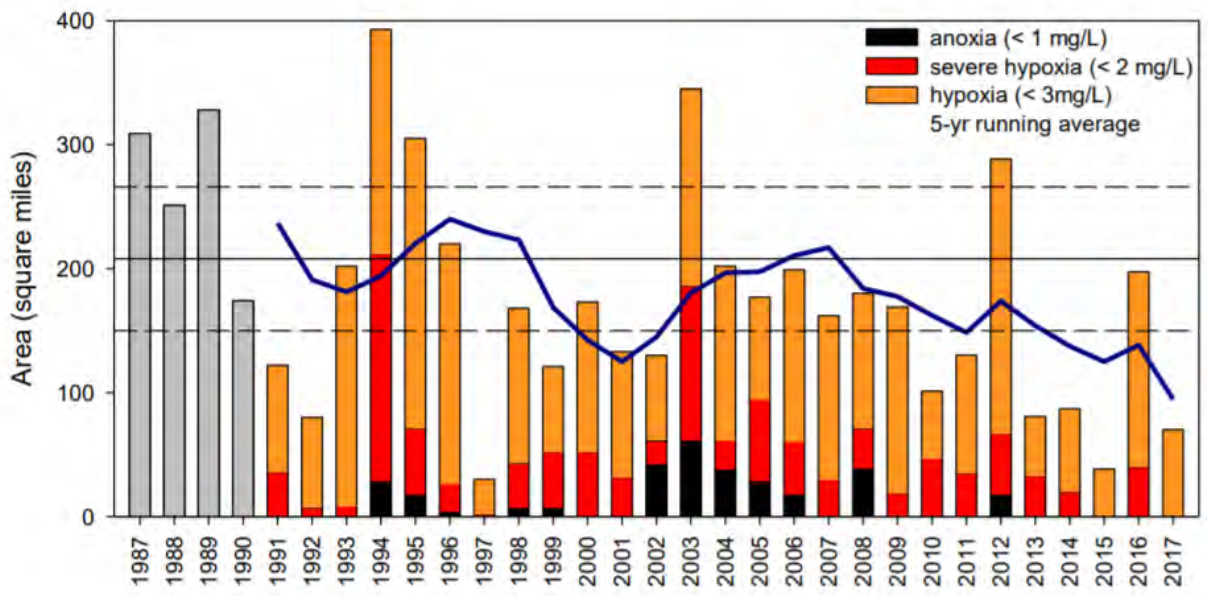
Poor performance of these pilot systems, where at best currently 20% do not meet expectations, may be a concern. On one hand, they are pilot systems and presumably are undergoing constant refinements. However, the systems were also installed for volunteers. These volunteers may mind the systems better than most residents eventually will; the systems require active maintenance, and they also need to be monitored and adjusted to ensure they are functioning correctly. It may be worth remembering Barry Commoner achieved 80% recycling rates with volunteers; a system designed according to his practices for the Town of East Hampton never achieved more than 40% recycling rates. The current system non-compliance rates of 20% (or more) may thus represent best case conditions.

Let's assume that these NRBs achieve their goal and reduce septic system N-inputs appreciably (on the order of 75%). If septic N-inputs are currently 50% to 75% of N-loading to the estuary, that should reduce overall N-loadings to the estuaries by 40-50% from current levels.

The Long Island Sound Study reports for Long Island Sound as a whole that "equalized" nitrogen loadings decreased from 60,000 lbs/d (an undated "baseline" value) (although the 50,000 lbs/d reported for 1994 may be more representative) to 20,000 lbs in 2016. Although the LISS no longer publishes the figure seen below, it was available from Vaudrey (2017). The figure shows a slow reduction in peak year areas of hypoxia, and a reduction in the average area impacted by hypoxia in the 2010s as compared to the 1990s. The 60% reduction in N from 1994 exceeds the tageted 58.5% N input reduction in the LISS, which was intended to eliminate hypoxia altogether. But the graph below clearly shows continuing, extensive hypoxia in Long Island Sound. So meeting the reduction goal did not achieve the intention of setting the goal – at least not yet. The Plan requires us to suppose that the impact of N reductions in the subwatersheds will be significantly different than what occurred in Long Island Sound.



There are several potential reasons that the Long Island Sound Study "best science"-driven program has not worked. One is that it simplified conditions, relating excess nutrients to phytoplankton blooms to bottom-water hypoxia. The Sound system is more complicated than a single variable, and the interplay of chemistry, physics, and biology has meant that N reductions into the system alone are insufficient for the intended purpose. Secondly, because of feedbacks across system elements, environmental systems often experience hysteresis (Scheffer 2009), where they do not return to baseline states after re-achieving lower stressor levels. Rather, the stressor must be reduced (often considerably so) below the critical values where ecological state

changes occurred. Hysteresis has been found to be greatest in systems where the water turn over rates are slowest (Hilt et al. 2011) (as in the eastern bays of the South Shore Estuary and the western portion of Peconic Bay)

On the other hand, it has recently been reported that a 25% reduction in N-loadings in the Chesapeake Bay has resulted in recovery of submerged aquatic vegetation (SAV) areas to the greatest levels in 40 years, increasing in area by approximately 150% from more recent measurements. This is correctly noted as a laudable achievement. It should be noted, however, that "bay-wide" nutrient concentrations (a value that may not be well-defined) were not reported to have changed as the nutrient inputs decreased (Lefcheck et al., 2018). Please note that this Plan seems to think estuarine N concentrations are a key measure, given the early emphasis on Figure 1.5. The Chesapeake Bay data imply that changes in N inputs do not necessarily result in reductions in water column N reductions. Reasons for this have been discussed earlier.

However, in coastal waters around Denmark reductions in nutrient inputs (50% for N, 56% for P) and associated declines in water column concentrations eventually resulted in declines in estuarine chlorophyll concentrations (a standing crop measure) and increased SAV; however, it took over 20 years from the achievement of lower nutrient inputs for the ecological effect to be measured, and the change also resulted in a decline in filter feeders (e.g., shellfish) and an increase in deposit feeders (e.g., worms) (Riemann et al. 2016). The Plan posits a much more immediate reaction in LI estuaries. In a fresh water system, reductions in nutrient inputs took some time to have any effect on lake conditions, but eventually resulted in declines in plankton and increases in macrophytes. However, the original species composition was not recovered; rather, a new ecological system resulted (Sand-Jensen et al. 2017). Ibanez and Penuelas (2019, supplementary materials) document reductions in phytoplankton and primary production for 7 of 8 estuaries where large changes in nutrients (they report P) occurred – but even there the result is not universal. So even if we successfully remove nutrients, and decrease bloom populations result, we may not return to the conditions sought for by the Plan. Loss of noxious species may be enough to cause celebration, but we do not have certainty as to the destination of this uncontrolled experiment.

Both hypoxia reductions and SAV increases have been identified as ecological indicators of improved ecosystem health in the Plan. So perhaps there are some mixed messages: N input

reductions in Long Island Sound incompletely reduced hypoxia; N (and phosphorous) input reductions in the Chesapeake Bay led to greater amounts of SAV. But keep in mind: although Lefcheck et al. (2018) called their findings "recovery of a temperate coastal region," in fall 2017 local newspapers I was able to read in the southern Chesapeake Bay area reported failure of oyster harvests for the first time ever, and many Maryland crab houses now buy crabs from Long Island due to a lack of local product. Prominent in the Plan presented here is a rapid recovery for fishing and other recreational pursuits, not just better indicator values; it may be that even if indicator values recover, overall ecological health recovery may not be achieved.

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There is growing evidence that rising temperatures (climate change) underlie marine ecosystem problems (Poloczanska et al. 2013). Rising bottom water temperatures drove lobsters from Long Island Sound (Pearce and Balcom 2005). Increased temperatures have been linked to ecological mismatches where plankton blooms no longer co-incide with zooplankton abundance so that formerly robust ecological relationships founder; perhaps changing temperatures, which are more likely to be a regional phenomenon, resulted in some similar temporal misalignment and led to the initial Brown Tide outbreak. Certain marine ecosystems develop particular ecological states because of particular alignments between nutrient availability, light, and temperature; and at least two of these have undergone large alterations over the past 100 years; these kinds of changes are causing large impacts to marine ecosystems (Jonkers et al. 2019). To mitigate changes in one of the factors would seem to be a positive step in any restoration program, but it may not be enough.

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The Plan does <u>not</u> demonstrate that alternative treatment systems <u>function reliably</u> and consistently achieve treatment goals. Even if treatment goals are reliably and consistently met by the systems, it is <u>not clear</u> that large enough reductions in N inputs to the groundwater will lead to <u>necessary reductions in the estuary</u>. Experience drawn from the Long Island Sound and Chesapeake Bay programs casts <u>doubt on the ecological health consequences</u> of reducing N inputs to estuarine systems.

Issue 4. From a public policy standpoint, given alternative environmental problems and uncertainties, $4B is a reasonable investment of public resources.

$4 billion is a tremendous expenditure. If it would ensure that the alternative systems would work properly, groundwater N concentrations would decrease, and thus the ecosystems would be

restored, it might be a reasonable and good use of resources. But there are tremendous uncertainties for each step of that chain. The success of the venture is not assured, despite the vast requirements for resources for its implementation.

There are other important environmental problems for Suffolk County residents. Investment in alternative energy sources is needed to avert climate change. Isn't climate change a more existential threat? If so, climate change and its minimization require more attention (and funds) than some other problem which, however locally important it is, does not threaten us in the same way. Locally, climate change mitigation will require very large expenditures on our shorelines: either to try to preserve important habitats and features like beaches and wetlands, or to protect increasingly threatened real estate. Since public funds are not unlimited, is a reduction in septic N inputs to groundwater the top environmental priority for Suffolk County? In fact, given pressing drinking water quality threats and the need for new and novel treatment systems for many water providers, it can be argued achieving N reductions is not even the top groundwater issue in the County.

The funding mechanism that has been proposed, a surcharge on water bills, is regressive. Since water use is of the same approximate magnitude across income groups, the large but not fiscally thriving middle class will pay the most. An alternative to consider is the Community Protection Fund (which has raised $1B over 20 years, according to data recently released by Fred Thiele). Doubling the Community Protection Fund rate for the East End towns and extending the base rate to the rest of Suffolk County could raise something close to $2B over 20 years. The funding difference between $4B and $2B could be addressed by making subsidies inverse to income, so that those who are wealthy pay their own way. Since the County is prioritizing shoreline area homes for the initial phase of the program, and those homes tend to be more expensive and therefore owned by those with more money, the program may not need to have its greatest funding level at the start, if an income test were used to determine eligibility for the subsidy. And, to further cut costs, houses in the Deep Recharge Zones should be exempt, since they will contribute no N to the estuaries. In the long view, exempting one-third of the County and having income qualifications for subsidies should make $2B sufficient funding.

Conclusions

The tremendous increase in reactive nitrogen over the past century is a pressing ecological issue. However, the science is not settled that septic N-inputs to groundwater are the cause of changing (declining) marine systems locally. Legacy and continuing agricultural inputs, legacy duck sludge contributions, and increasing oceanic concentrations are also elements in the N story; and there are concerns that other factors (rising temperatures, decreasing pHs, changes in fish populations, changing sediment quality, loss of wetlands, loss of SAV, loss of shellfish, etc.) also are complicit in the overall ecological problem. Changing one element of a complicated relationship is unlikely to lead to ecological restoration. In addition, the technology solution is expensive and unreliable. If changing septic technologies was simple and cheap and effective, it would certainly be a good thing to do: in the big picture, removing pollutant sources is never a bad idea. But it may not be an idea we can afford, and it certainly seems like there are better things to do with $4B.

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22 Daffodil Road
August 27, 2019

Ken Zegel, PE
Assistant Public Health Engineer
Suffolk County Department of Health Services
Office of Ecology
360 Yaphank Avenue, Suite 2B
Yaphank, New York 11980

Dear Mr. Zegel:

I am writing to contribute to the public comment on Suffolk County's Wastewater Plan after finding out about this plan only a few weeks ago, though being a life-long Suffolk resident and property owner since 2010. Subsequently, I viewed the Draft of the General Environmental Impact Statement released for public view and read much of the Reclaim Our Water website, as well as articles which have been published on it in the past. What became clear is that fully commenting on aspects of this plan would be difficult or impossible due to its many layers of complexity. I will try to address the main points I noted.

a First, I am not understanding the dependence of the Draft on estimates, predictions, and modeling. There seems a disconnect of data evidence to warrant the dramatic proposal by the
b County. Not understood also is the unrealistic expense the County plans to lay onto homeowners like me. Installation of this new septic system averages, they say, $20,000 to include engineering, vendor, and permit costs. The County advertises grant money for part of that, with no funding source for it; even if one does exist, funding is only given to those eligible, whoever that is. Costs remaining are to be absorbed by the property owner as a 15-year, 3% interest loan which has a $10,000 borrowing limit. What is one cannot qualify for such a loan or afford it? Not mentioned in all this are the costs to repair landscape, space required for the system, and the cost of keeping the new system maintained. Requiring multiple tanks accessible from the surface and a drain-field, the space to be utilized in a yard is significant, particularly for many of us in Rocky Point with lots under a quarter-of-an-acre like me. Even for the "small-space" systems it is like burying a coffin plus a few tables. The Reclaim site also says these systems require a $300 annual maintenance contract, have a cost of $30-200 per part needing replacement, increase annual electric costs $57-266, and need to be pumped out at $300-500
c every 3-5 years. Additionally, there is no evidence as to the performance or reliability aspects of these new systems, nor a comparison to cesspool function.

In reading the July 31, 2019 *Newsday* article by Rick Brand and David Schwartz, "Suffolk Officials Unveil $4 Billion Plan to Fight Nitrogen Pollution in Surface Waters", the authors wrote only half a dozen systems are being tested residentially under the County's pilot program, with three failing and one most likely to be shut down. Also presented were arguments

from professionals opposing the County's claims and proposed plan; I echo their critiques. Why do they not have a seat at the table, but only those with vested interests like environmental groups, politicians, and builders and laborers? Have alternative steps that are more measured adjustments been considered?

Even consider starting with educating people on easy ways to reduce nitrogen waste. d
Organic fertilizers, weed control, plant and insect sprays have grown tremendously in availability in recent years. Personally, I use all organic products on my property for routine care and they are wonderful and safe for people, pets, and the environment. Likewise, cesspools work well if treated routinely with natural biologics, which digest the material in them. If grease and other wastes are not flushed down the system, and if consideration is given to the time needed for a cesspool to process what is sent to it, it is largely stable over time and has a negligible annual cost. Businesses should be connected to sewer systems to adequately handle their high waste e
needs. See what this alone does in a number of years by recording data and addressing areas that need it rather than a county-wide punishment. Involve groups with opposing interests to develop a more balanced approach weighing if predictions from estimates and models are even accurate, use a sample size of new systems from voluntary property owners large enough to obtain a valid f
conclusion on their functioning over time, and then analyze if they demonstrate a viable, long-term option for the masses.

It also did not go unnoticed that this public comment period, ending September 16th, is placed at a time of year when most are busy with end-of-summer goings on; with public meetings scheduled during the first few days of the new school year. I hope to attend one of the meetings, but wanted to make sure to contribute my comments. I hope Suffolk will act in the interest of its property owners and not mandate this unwarranted burden of changing to an expensive and unproven system, but take a more targeted tact to areas of concern with a balanced approach which includes the input of opposing views.

Thank you for your time and consideration of my comments.

Sincerely,

Jennifer Cameron

Jennifer Cameron

From: Zegel, Ken <Ken.Zegel@suffolkcountyny.gov>
Sent: Thursday, August 29, 2019 3:33 PM
To:
Subject: FW: $20k Septic Systems

From: john gladysz [mailto:johngladysz@yahoo.com]
Sent: Thursday, August 29, 2019 2:49 PM
To: Zegel, Ken <Ken.Zegel@suffolkcountyny.gov>
Subject: $20k Septic Systems

ATTENTION: This email came from an external source. Do not open attachments or click on links from unknown senders or unexpected emails.

Dear Ken,

I am retired from 38 years working for the Health Department and have experience in all areas of water protection. The proposed "theft" of adding a $20,000 penalty is not warranted by the science of protecting the water of Suffolk County. It is more likely the brain child of a "so-called " environmental expert with little or no real experience in protecting our environment. I have a bachelor of science in biology and a Master of Science in Environmental studies. I have inspected STP's and reviewed water smpling results from all over our county. The science does not support such a money grab. It appears our politicians think they have stubbled upon a new source of revenue to line their coffers with.
As an engineer, I call upon your integrity not to support this insanity.

Sincerely,
John A. Gladysz, retired Hearing Officer and Associated Sanitarian
Sent from Yahoo Mail on Android

From:
Sent: Tuesday, September 3, 2019 11:19 AM
To:
Cc:
Subject: FW: Septic Upgrades

-----Original Message-----
From: Steve Martin [mailto:spmartin@optonline.net]
Sent: Monday, September 02, 2019 12:27 PM
To: Zegel, Ken <Ken.Zegel@suffolkcountyny.gov>
Subject: Septic Upgrades

ATTENTION: This email came from an external source. Do not open attachments or click on links from unknown senders or unexpected emails.

Dear Mr. Zegel,
I am contacting you today to voice my opposition to Suffolk County's intention to mandate homeowner septic systems be upgraded.
From everything I've read, the data presented are projections and estimates. My home is miles from any body of water and it is unlikely any nitrogen could leach from my septic system and reach anything. a
All of my children have grown and left Long Island, chiefly because of the taxes and this is yet another tax. This proposal is also quite insidious in that its impact is suffered upon the sale or upgrade to your home, a process that may not be realized for 30 years or more. I ask, if this is so important why are you allowing the process to take this long? Of course the answer is that there would be revolt in the streets should you attempt to implement such an absurdity immediately. I guess Suffolk county government feels that they can pick the pockets of its homeowners as they leave. Just another reason why people want to leave. b c d

Stephen Martin
6 Hermitage St.
Wading River

Sent from my iPhone

From:
Sent: Wednesday, September 4, 2019 12:30 PM
To:
Cc:
Subject: FW: Septic system upgrade

From: Paulette Martin [mailto:pmbarbie40@yahoo.com]
Sent: Tuesday, September 03, 2019 8:40 PM
To: Zegel, Ken <Ken.Zegel@suffolkcountyny.gov>
Subject: Septic system upgrade

ATTENTION: This email came from an external source. Do not open attachments or click on links from unknown senders or unexpected emails.

Dear Mr. Zegel,

I am opposed to Suffolk County's plan to mandate upgraded homeowner septic systems.

All of the data I've read has only projections and estimates of septic system impacts. My home is very far from any body of water and I doubt I contribute to any algae bloom. a

Long Island continues to suffer from the loss of our youth and our outrageous taxes are a contributor. This is just another tax. b

Paulette Martin
6 Hermitage St.
Wading River

Sent from my iPhone

From:
Sent: Wednesday, September 4, 2019 12:31 PM
To:
Cc:
Subject: FW: The Foggiest Idea's comments re: The Subwatersheds Wastewater Plan
Attachments: Murdocco Comments Subwatersheds Wastewater Plan 2019.pdf

---

From: Zegel, Ken
Sent: Wednesday, September 4, 2019 11:36 AM
To: Caniano, Anthony
Subject: FW: The Foggiest Idea's comments re: The Subwatersheds Wastewater Plan

From: Richard Murdocco [mailto:rich.murdocco@gmail.com]
Sent: Wednesday, September 04, 2019 11:34 AM
To: Septic demo <Septicdemo@suffolkcountyny.gov>; Zegel, Ken <Ken.Zegel@suffolkcountyny.gov>
Cc: Scully, Peter <Peter.Scully@suffolkcountyny.gov>; Black, Lisa <Lisa.Black@suffolkcountyny.gov>
Subject: The Foggiest Idea's comments re: The Subwatersheds Wastewater Plan

ATTENTION: This email came from an external source. Do not open attachments or click on links from unknown senders or unexpected emails.

Hello -

My name is Richard Murdocco, and I am writing to submit *The Foggiest Idea*'s feedback regarding county's efforts to curb nitrogen loadings within the groundwaters of Suffolk County.

You can find *TFI*'s remarks attached as a PDF.

As you may be aware, *The Foggiest Idea* regularly reviews critical infrastructure projects in the region. In summary, substantive action should be taken by local government, but at mitigated cost to homeowners.

Feel free to reach out if you need anything further. Thanks -

RJM
--
President,
The Foggiest Idea Inc.
Phone: 1-631-560-1450
www.TheFoggiestIdea.org

Follow along on Twitter @TheFoggiestIdea
LIKE The Foggiest Idea on Facebook

The Award-Winning Resource on Real Estate Development.

Phone: 631-560-1450
Email: Rich@TheFoggiestIdea.org

September 4, 2019

To elected officials and policymakers within the Suffolk County Department of Health -

My name is Richard Murdocco, and I am writing to submit public comments in regards to Suffolk County's *Subwatersheds Wastewater Plan*.

As part of the research process for its award-winning body of work on Long Island's environmental and development issues, *The Foggiest Idea* regularly reviews the policy actions taken by local, state, and federal governments that impact communities throughout Nassau and Suffolk Counties.

The plan under consideration lays out a series of policy actions that ambitiously seek to curb nitrogen loadings throughout the region. While the pursuit of such a goal is worthwhile, caution must be taken in regards to the mechanisms of this plan's implementation – in short, the county must limit fiscal impact to residents while at the same time working to guarantee that local land use protections remain effective in curbing additional harm to ground and surface waters. a

As such, it is critically important that any strategy to limit nitrogen contamination is based upon the best available methodologies and data, as well as is effective in limiting out-of-pocket costs for already cost-burdened home/property owners in need of a new wastewater system. Prevention of mandated septic upgrades at their sole expense through the leveraging of any available state and federal monies would be a good start.

In addition, it is encouraging to see the document advocate for the continued purchasing open space for aquifer recharge, but the county must work with local municipalities to ensure the effectiveness of their zoning towards the prevention of harmful over-development on previously undisturbed parcels of land. Moving forward, future growth should be adaptive of obsolete land usage, and integrate clustered designs that maintain open spaces where feasible. b

Lack of sufficient land use controls result in an over-reliance on sewering to support growth, which both lowers local water tables and allows for higher developmental densities beyond the capacity of local infrastructure networks.

There is no silver-bullet approach to Long Island's water woes – but the *Subwatersheds Wastewater Plan* under consideration is a good starting point. Now, it's up the county to ensure that implementation of this document is both fiscally manageable for Suffolk County residents and environmentally sustainable.

Sincerely -

Richard Murdocco

Founder/President
The Foggiest Idea Inc.

Aug 30, 2019

7

KEN ZEGEL
Suffolk Co. Dept of Health Services

DEAR MR. ZEGEL,

This week I read in The Community Journal The article re the County's Wastewater Plan. Like most Suffolk County residents, I am very disturbed by what The County plans to do concerning The installation of new septic systems. Obviously This would be a tremendous cost to us taxpayers. Already my home property taxes are in the $15,000 range + The possible additional costs of new septic systems would probably force me to sell my home in Shoreham + move to a place (outside of N.Y.) where I could afford to live. As retired seniors, my wife + I strongly oppose what The County wants to do.

I hope This letter with many others will put an end to This foolish waste of money. We have had enough + will fight to stop This economic lunacy.

Thank you very much for your support.

Sincerely,

Vincent Amato
24 Suffolk Down
Shoreham, NY 11786

From:
Sent: Thursday, September 5, 2019 10:25 AM
To:
Cc:
Subject: FW: NEW SEPTIC SYSTEMS

From: Padre736 [mailto:padre736@aol.com]
Sent: Thursday, September 05, 2019 9:38 AM
To: Zegel, Ken <Ken.Zegel@suffolkcountyny.gov>
Subject: NEW SEPTIC SYSTEMS

ATTENTION: This email came from an external source. Do not open attachments or click on links from unknown senders or unexpected emails.

THIS IS AN ABSOLUTE DISGRACE; ANOTHER GOVERNMENT PROGRAM BORN OUT OF ARROGANCE AND STUPIDITY. THIS WILL RESULT IN SUFFOLK COUNTY BEING THE CAPITAL OF ZOMBIE HOMES.

PROPERTY VALUES WILL FALL; THE ELDERLY SUCH AS MY 91 YEAR OLD MOM COULD NEVER AFFORD THIS AND NEITHER WILL HER ESTATE. WHO WOULD EVEN CONSIDER MOVING INTO AND AREA WITH THIS NONSENSE. HAVE LIVED IN SMITHTOWN FOR OVER 45 YRS. HAD MY CESSPOOL DRAINED THREE TIMES; THIS WILL INCREASE MANY TIMES OVER WITH THIS NEW SYSTEM.
SORRY I MOVED HERE; ONCE THIS WAS THE BELL OF NEW YORK REAL ESTATE - NO LONGER.
IF THIS PASSES YOU WILL SEE SUFFOLK COUNTY BECOME THE CAPITAL OF ZOMBIE HOMES. SUFFOLK COUNTY WILL BECOME "THE BRONX". IN ADDITION THEIR WILL BE MANY HOMES WHERE ELECTRICAL FIRES WILL ARISE FROM " A CARELESS NATURE". THE OWNER WILL TAKE THE INSURANCE MONEY AND WALK AWAY.

THE GOVERNMENT A HOME FOR PEOPLE WHO THINK THEY KNOW EVERYTHING ABOUT EVERYTHING BUT - IT JUST IS NOT SO!!!

TOM DISTEFANO

Sept. 2,2019

Dear Ken Zegel,
Re: Septic systems.
I am very against this proposed plan. I am enclosing an article from the Community Journal.
How about putting a moratorium against multi unit , multifamily housing units like the mega development on 25A east of North Ocean Ave. & require them to install a waste treatment plant on their premises like they have at Stony Brook U.?
Your proposed plan will drive hard-working people into debt. Have you checked the actual facts and the geology of the island? For instance, my house is on clay which acts as a barrier for water. We are getting water from the deeper of the two aquifers. According to the SCWA, the water is safe. Why are you burdening the taxpayers of this county with more financial burden over suppositions like the children's story of Chicken Little with his "The sky is falling."
Thank you for your consideration of this matter
Hope Olinsky
Rocky Point

Hope Olinsky

Dear Sir or Madam:

Dear Sir or Madam: I have written this letter multiple times as each time I find out more about the County's Wastewater Plan; and it becomes more befuddling as I learn more. One layer of befuddlement is a deficiency of evidence.

I do not see, after viewing the **Draft of the General Environmental Impact Statement** (DGEIS), released for public view, how the actions proposed in the plan are necessary. This 552-page document is supposed to present to the public why this plan is needed and of what it consists. What you will see, repeatedly, in it are the terms *"estimate," "prediction"* and *"modeling."*

No data tables; any percentages included from measures taken do not seem to warrant the dramatic nature of the solution being put forth by the County.

Another layer of befuddlement is the unrealistic expense to be burdened on homeowners. Installation of this new septic system averages, they say, $20,000 to include engineering, vendor, and permit costs.

The County advertises grant money for part of that, but they have no funding source for it, and, even if one does exist, funding is only given to those people "eligible," whoever that is. Costs remaining are to be absorbed by the property

continued on page 5

Dear Sir or Madam...

continued from page 1

owner as a 15-year, 3% interest loan which has a $10,000 borrowing limit.

Not mentioned in all this are the costs to repair landscape, space required for the system, and the cost of keeping the new system maintained. These new systems need multiple tanks accessible from the surface and a drain-field; ponder the dimensions of the area needed for such a system if you have a small yard. Even for the "small-space" systems this septic system is like burying a coffin plus a few tables.

These systems also require a $300 annual maintenance contract; have a cost of $30-$200 per part needing replacement, increase in annual electric costs of $57-266, and need to be pumped out at a (today cost) of $300-500 every 3-5 years. This all starts in 2024 if you are in a County-labeled "Phase II" area, with other areas following on a timeline where a changeover will be mandated if the County deems your current cesspool a failure or if you simply wish to sell your house.

Additionally, there is no evidence as to the performance, or reliability aspects, of these new septic systems, nor a comparison to cesspool function. The layers are vast and cannot be addressed in a simple letter or article. I encourage, and hope, people will spend some time going to the County site: **Reclaim Our Water (www.reclaimourwater.info)** and read about what is on tap for them and view the cost estimates.

Look at this plan from a perspective of a person trying to see evidence for a series of actions; do not just accept quotes driven by emotion played on a backdrop of meadow grass as enough.

I encourage people to read the July 31,2019 ***Newsday*** article by Rick Brand and David Schwartz: *"Suffolk Officials Unveil $4 Billion Plan to Fight Nitrogen Pollution in Surface Waters"* as it presents many of the complexities relevant to this wastewater proposal.

I also encourage people to consider alternatives starting with educating people on easy ways to reduce nitrogen waste. Organic fertilizers, weed control, plant and insect sprays have grown tremendously in availability in recent years. All-organic products on property for routine care are wonderful and safe for people, pets, and the environment.

Likewise, cesspools work well if treated routinely with natural biologics, which digest the material in them. A cesspool is largely stable over time and has a negligible annual cost. Businesses should be connected to sewer systems to adequately handle their waste needs. See what this alone does in a number of years by recording data and addressing areas that need it rather than a county-wide punishment.

Groups, with opposing interests, should be involved in this plan in order to develop a more balanced approach and to verify if predictions from estimates and models are even accurate. *(See page 1 for how to place your comments and opinions.)* ***Jennifer Cameron***

Hardest Working States

With Americans working an average of almost 1,800 hours per year and the average worker using only 54% of their available vacation time, the personal-finance website WalletHub reports 2019's **Hardest-Working States in America**

In order to determine where Americans work the hardest, the data set ranges from average work week hours to share of workers with multiple jobs to annual volunteer hours per resident. Top 20 Hardest-Working States in America are:

1	North Dakota	11	New Hampshire
2	Alaska	12	Oklahoma
3	South Dakota	13	Kansas
4	Texas	14	Iowa
5	Nebraska	15	Minnesota
6	Hawaii	16	Tennessee
7	Wyoming	17	Georgia
8	Colorado	18	Utah
9	Virginia	19	Louisiana
10	Maryland	20	[illegible]

From:
Sent: Thursday, September 5, 2019 3:15 PM
To:
Subject: FW: Septic System Comment

I

From: Robin Appel [mailto:robinappel@verizon.net]
Sent: Thursday, September 05, 2019 3:10 PM
To: Zegel, Ken <Ken.Zegel@suffolkcountyny.gov>
Subject: FW: Septic System Comment

ATTENTION: This email came from an external source. Do not open attachments or click on links from unknown senders or unexpected emails.

Dear Mr. Zegel,
I am completely in favor of improving the couinty cesspool sitution, but why can't we install sewer systems with water treatment rather than spend a LOT of money for a system that will still have wastewater seeping into our groundwater.

Robin Appel
Shoreham, NY

From:
Sent: Monday, September 9, 2019 9:31 AM
To:
Subject: FW: Septic system upgrades

-----Original Message-----
From: Adeline Ayres [mailto:adeline.ayres@ymail.com]
Sent: Friday, September 06, 2019 5:29 PM
To: Zegel, Ken <Ken.Zegel@suffolkcountyny.gov>
Subject: Septic system upgrades

ATTENTION: This email came from an external source. Do not open attachments or click on links from unknown senders or unexpected emails.

To whom it may concern:

My husband and I have been lifelong residents of Long Island . For the first time in our lives we are seriously considering leaving Long Island and maybe even the state of New York. The reason being we are ready to retire, we are considered upper middle class, and we feel that Long Island has become too expensive to live. Making people replace their fully functioning septic system just because they are selling or buying a home is an undue hardship. We own a large home and we're contemplating downsizing ,that would most likely mean we would take a hit on selling our house and another to replace the system in the new house we move to, depending on how the deals worked out. The research we have done shows this "upgrade" won't make much of an environmental difference. We can understand any new construction or when a system that fails needs to be replaced having to purchase the 20,000 dollar upgrade but for no other circumstance. Besides the $20,000 bill there is also collateral damage .Replacing sprinklers,lawn,walkways etc. , the total can be staggering. I can't imagine families less fortunate then us being burdened with this major expense. We believe instituting this demand will negatively affect the housing market and will force what would be first home buyers to wait even longer to purchase a home if at all. People selling large homes such as myself are finding them hard to sell because our property taxes are through the roof .If this septic upgrade is added it will make it worse. a
We recently discovered that our 15 yr old air conditioning system will also have to be replaced for environmental reasons because the freon needed for our current systems will no longer be available.That upgrade estimate we have been given is $30,000. The peconic tax that needs to be paid for environmental reasons upon the sale of my house is also a major deterrent to buyers.

Although the environment is a major concern for long islanders there are other options available. Maybe outlawing all the fertilizers and pesticides we dump on our lawns every year or enforcing that they should be organic. Make these new changes through attrition. Maybe if the majority of our school taxes ($16,000) didn't go to a school system that supports and enables illegal immigrants we would have more money to protect our environment. b

There are so many reasons why Long Island is getting too expensive ,but we feel imposing this septic upgrade is incredulous and may be the deciding factor as to wether we should take our income elsewhere. Take our hard earned pensions and savings and give them to a state that won't take us over the coals. Please listen to the people and not to politicians making deals.

Sincerely,
Adeline and Gary Kuhnle

Sent from my iPad

From: Zegel, Ken <Ken.Zegel@suffolkcountyny.gov>
Sent: Monday, September 9, 2019 9:30 AM
To:
Subject: FW: $20K Septic System

From: philip denoto [mailto:pdenoto@hotmail.com]
Sent: Saturday, September 07, 2019 8:28 AM
To: Zegel, Ken <Ken.Zegel@suffolkcountyny.gov>
Subject: $20K Septic System

ATTENTION: This email came from an external source. Do not open attachments or click on links from unknown senders or unexpected emails.

Mr. Zegel,

Please do not allow $20K septic system to become a reality. The Democratic party's idea of making it mandatory to spend $20K to add a septic system to be able to sell one's house is the worst idea out of government I have seen in quite some time. There is no justifiable reason to do this and if the Democratic party really believes it is needed, put it on the ballot and let people vote on the merit. This dumb idea should not be jammed down homeowners throats.

Thank you for your consideration in this matter.

Regards,

Philip De Noto

From:
Sent: Monday, September 9, 2019 9:28 AM
To:
Subject: FW: Residential cesspools

From: Joseph Sassone [mailto:joesass4@icloud.com]
Sent: Saturday, September 07, 2019 2:26 PM
To: Zegel, Ken <Ken.Zegel@suffolkcountyny.gov>; sara.ANKER@suffolkcountyny.gov
Subject: Fwd: Residential cesspools

ATTENTION: This email came from an external source. Do not open attachments or click on links from unknown senders or unexpected emails.

Sent from my iPad

Begin forwarded message:

> **From:** Joseph Sassone <joesass4@icloud.com>
> **Date:** September 7, 2019 at 2:13:27 PM EDT
> **To:** ken.zegel@suffolkcounty.gov, Sara.ANKER@suffolkcounty.gov
> **Subject: Residential cesspools**
>
> Sir, The plan to force residential cesspool upgrades at $20,000 per is nothing short of obscene. It will do little to protect the wells if anything at all. Many other remedies are available with less cost to the taxpayers. Also technological advances are at our doorstep. Please shelf this foolish plan and work for the residents, not against us.
> Thank You,
> Joseph Sassone
> Sent from my iPad. 124 Magnolia Dr. Rocky Pt. 11778

From:
Sent: Monday, September 9, 2019 1:20 PM
To:
Cc:
Subject: FW: Subwataersheds Wastewater Plan

-----Original Message-----
From: Zegel, Ken
Sent: Monday, September 9, 2019 1:02 PM
To: Caniano, Anthony
Subject: FW: Subwataersheds Wastewater Plan

-----Original Message-----
From: teaparty101 [mailto:teaparty101@optonline.net]
Sent: Monday, September 09, 2019 1:02 PM
To: Zegel, Ken <Ken.Zegel@suffolkcountyny.gov>
Subject: Subwataersheds Wastewater Plan

ATTENTION: This email came from an external source. Do not open attachments or click on links from unknown senders or unexpected emails.

I am writing to oppose the above Suffolk County mini sewage-treatment plants.

The cost of the installation and maintenance fees are unsustainable. Our property values will decrease, as it will be a
difficult selling due to the costs, added on to the Long Island cost of living. Also, based on testimonies from b
environmental experts, there are more minuses than pluses. Anyone with any knowledge knows that this is a plan for overdevelopment by politicians and special interest groups. We just have to follow the money.

BURIED IN SECTION 8 OF 'SUFFOLK COUNTY'S COMPREHENSIVE WATER RESOURCES MANAGEMENT PLAN' IT CALLS FOR c
WAYS TO STIMULATE DEVELOPMENT TO PROMOTE ECONOMIC GROWTH AND STABILITY. THIS BUREAUCRATIC CODE TRANSLATES INTO THE CREATION OF SEWERS, WHICH IN TURN, ALLOWS FOR MORE DEVELOPMENTAL DENSITY.

Even the SCWA opposed the water bill surcharge as nitrogen is not a top concern in drinking water. d

For the above reasons and many more, I am requesting that this plan not be approved.

Thank you.

Natalie Allegato

LONG ISLAND REGIONAL PLANNING COUNCIL
Leadership on Regional Issues

LONG ISLAND REGIONAL PLANNING COUNCIL
1864 Muttontown Road Syosset, New York 11791
www.lirpc.org | 516-571-7613

September 5, 2019

Ken Zegel, PE, Associate Public Health Engineer
Suffolk County Department of Health Services
Office of Ecology
360 Yaphank Avenue, Suite 2B
Yaphank, NY 11980

RE: Suffolk County's Subwatersheds Wastewater Plan and Draft Generic Environmental Impact Statement

Dear Mr. Zegel,

On behalf of the Long Island Regional Planning Council (LIRPC), I offer our strong support for Suffolk County's carefully crafted Subwatersheds Wastewater Plan which will provide a much-needed countywide strategy to tackle what has become the greatest threat to Long Island's surface waters and groundwater - nitrogen pollution. As has become widely known and is noted in the Subwatersheds Wastewater Plan (SWP), nitrogen pollution has had a significant impact on the region's economy, coastal resiliency to storms that have grown in intensity and the overall quality of life in Suffolk County as well as all of Long Island.

The County's SWP will undeniably prove to be an effective County-wide wastewater management road map to reduce nitrogen-related pollution from point and non-point wastewater sources. The SWP will also lay the groundwork for the development of strategies to address nitrogen from non-wastewater sources by identifying waterbodies where additional mitigation measures may be required to restore water quality. The SWP will help policymakers and stakeholders make informed decisions regarding best management practices that address both types of source pollution, and in doing so, will meet the needs of both the Long Island Nitrogen Action Plan (LINAP) and Reclaim Our Water initiatives.

It's also important to highlight the historical significance of the SWP initiative and the significant effort that produced this extraordinary plan along with the Draft Generic Environmental Impact Statement (DGEIS). The SWP is unique in that it represents the first integrated evaluation of all three major estuary systems – Long Island Sound, Peconic Estuary, and South Shore Estuary Reserve – since the Long Island 208 Study was issued in the late 1970s. In addition, the SWP makes use of a first-of-its-kind integrated and predictive groundwater model to identify subwatershed boundaries and estimated nitrogen loads for 191 surface waterbodies in the County. In what is another first for the County, the SWP established first order nitrogen load reduction goals for all waterbodies evaluated in the study for the management of ecological endpoints including dissolved oxygen, harmful algal blooms, and protection of eelgrass (via improvement of water clarity).

If we follow and implement the SWP's robust blueprint, the quality of Long Island's groundwater and surface waters will categorically improve. The water quality in our streams, rivers, lakes and estuaries will improve as

will our communities, our economy and our general health and well-being. With a unified front, this can all happen in our lifetime – with the trend in worsening water quality being checked and reversed within a decade. The choice and the responsibility are ours to make.

We know what works. Extensive research has already been conducted by the region's foremost experts from the scientific community. We know that replacing aging cesspools and septic systems with new state-of-the-art systems will reduce nitrogen loads. We know that connecting homes and businesses to a central sewer system will reduce nitrogen loads. Upgrading treatment plants, expanding sewer districts, incorporating green infrastructure and fertilizer use restrictions will also reduce nitrogen loads. Indeed, sound solutions exist today.

LIRPC endorses the recommendation for a stable and recurring funding mechanism to make the new systems or sewer connections affordable for homeowners. As we know, a dedicated funding stream has proven effective in other parts of the U.S., particularly with efforts to improve the health of the Chesapeake Bay and Puget Sound.

In conclusion, LIRPC would like to express its appreciation to County Executive Steve Bellone and staff for their leadership on this important Reclaim Our Water and LINAP initiative which will play a key role in solving Long Island's water quality crisis.

Thank you for the opportunity to comment on the County's Subwatersheds Wastewater Plan and DGEIS. As a fellow member of the LINAP Project Management Team, we look forward to continuing our collaboration with Suffolk County as the SWP, Reclaim Our Water and LINAP initiatives continue to progress.

Sincerely,

John D. Cameron, Jr., P.E.
Chair
Long Island Regional Planning Council

Cc: Peter Scully
Dr. James L. Tomarken
Sarah Lansdale

Mr Zegel + Legislators,

$20K Septic Systems

We see this as an outrageous scheme + abuse of Power

n the August 22 Community Journal, page one, "Cesspool Information for All," revealed hat there is a County plan to replace cesspools with $20,000 each "septic systems" when ou sell your home. But the plan is not based on verified facts. It will cost the taxpayer $$ BILLION DOLLARS. Pay attention, folks, the time to protest is running out.

ennifer Cameron, local resident, writes: "I encourage people to use the public comment eriod to make their feelings known. Begun on August 16th, and continuing while most re busy with end-of-summer goings on, we only have until September 16th to comment. Two meetings are scheduled, one on September 5th from 6-9pm at the Suffolk County Legislative Auditorium in Riverhead and one on September 6th from 3-5pm at Suffolk Community College's Grant Campus. If unable to contribute then, comments can be sent to **Ken Zegel PE, Assistance Public Health Engineer, Suffolk County Department of Health Services, Office of Ecology, 360 Yaphank Avenue, Suite 2B, Yaphank NY 11980;** also contacted by email at **ken.zegel@suffolkcountyny.gov** or 631-852-5750.

Dear Sir or Madam:

Dear Sir or Madam: I have written this letter multiple times as each time I find out more about the County's Wastewater Plan; and it becomes more befuddling as I learn more. One layer of befuddlement is a deficiency of evidence.

I do not see, after viewing the **Draft of the General Environmental Impact Statement** (DGEIS), released for public view, how the actions proposed in the plan are necessary. This 552-page document is supposed to present to the public why this plan is needed and of what it consists. What you will see, repeatedly, in it are the terms *"estimate," "prediction"* and *"modeling."*

No data tables; any percentages included from measures taken do not seem to warrant the dramatic nature of the solution being put forth by the County.

Another layer of befuddlement is the unrealistic expense to be burdened on homeowners. Installation of this new septic system averages, they say, $20,000 to include engineering, vendor, and permit costs.

The County advertises grant money for part of that, but they have no funding source for it, and, even if one does exist, funding is only given to those people "eligible," whoever that is. Costs remaining are to be absorbed by the property

continued on page 5

per part needing replacement, increase in annual electric costs of $57-266, and need to be pumped out at a (today cost) of $300-500 every 3-5 years. This all starts in 2024 if you are in a County-labeled "Phase II" area, with other areas following on a timeline where a changeover will be mandated if the County deems your current cesspool a failure or if you simply wish to sell your house. Absurd! *

Additionally, there is no evidence as to the performance, or reliability aspects, of these new septic systems, nor a comparison to cesspool function. The layers are vast and cannot be addressed in a simple letter or article. I encourage, and hope, people will spend some time going to the County site: **Reclaim Our Water (www.reclaimourwater.info)** and read about what is on tap for them and view the cost estimates.

Look at this plan from a perspective of a person trying to see evidence for a series of actions; do not just accept quotes driven by emotion played on a backdrop of meadow grass as enough.

I encourage people to read the July 31,2019 ***Newsday*** article by Rick Brand and David Schwartz: *"Suffolk Officials Unveil $4 Billion Plan to Fight Nitrogen Pollution in Surface Waters"* as it presents many of the complexities relevant to this wastewater proposal.

I also encourage people to consider alternatives starting with educating people on easy ways to reduce nitrogen waste. Organic fertilizers, weed control, plant and insect sprays have grown tremendously in availability in recent years. All-organic products on property for routine care are wonderful and safe for people, pets, and the environment.

Likewise, cesspools work well if treated routinely with natural biologics, which digest the material in them. A cesspool is largely stable over time and has a negligible annual cost. Businesses should be connected to sewer systems to adequately handle their waste needs. See what this alone does in a number of years by recording data and addressing areas that need it rather than a county-wide punishment.

great reasoning! TRY it!

Groups, with opposing interests, should be involved in this plan in order to develop a more balanced approach and to verify if predictions from estimates and models are even accurate. *(See page 1 for how to place your comments and opinions.)* ***Jennifer Cameron*** *

* As long-time Suffolk property-tax homeowners (39yrs), we are unequivocally opposed to any such "law" going in effect! We recently replaced the old cesspools & certainly cannot afford what the legislature proposes. We see this as taxation w/o Representation

Pablo + Laura Martin (Wading River) No wonder seniores + Middle class are fleeing LI

Steven E. Perry
6 Brookhaven Drive
Rocky Point, NY 11778-9015
(631) 744-6462
E-Mail: seperry@optonline.net

September 4, 2019

Suffolk County Department of Health Services
Office of Ecology
360 Yaphank Avenue, Suite 2B
Yaphank, NY 11980

Attention: Mr. Ken Zegel, PE,
Assistant Public Health Engineer

Dear Mr. Zegel:

I am writing to express my and my wife's strong opposition to the Suffolk County's plan to force homeowners to replace their cesspools with very expensive septic systems before they can sell their property. This in nothing more than an extremely high and burdensome real estate transfer tax.

While the projected cost today is $20,000, with inflation, by the time this law is in effect for a few years, the cost will skyrocket to more than $50,000. a

These septic systems need electricity to operate. What is the homeowner with one of these systems and no backup generator to do when the power goes out for an extended period as it usually does when a hurricane comes our way. The last time a hurricane hit Long Island my wife and I were "off the grid" for ten days.

I have a new cesspool (three years old) its life expectancy is at least 25 years. My wife and I are in our 80's. We will be not living here many more years. Under this plan we (or our executors) will have to delay the sale of our home, pay an exorbitant price to wreck our landscaping and install this new septic system, and then pay even more to have the landscaping restored to make the house saleable. Who came up with such an Idea?

My information shows the technology has not been proven. I respectfully submit that It is time go back to the drawing board and devise a more practical system that is not a financial burden to the fine citizens of Suffolk County. b

This plan should not be decided by a vote of the county legislature. I needs to be voted on by the citizens of Suffolk County. c

Sincerely,

Steven E. Perry

cc: Sarah S. Anker, District 6

A Review of the Draft Generic Environmental Impact Statement for the Suffolk County Subwatersheds Wastewater Plan

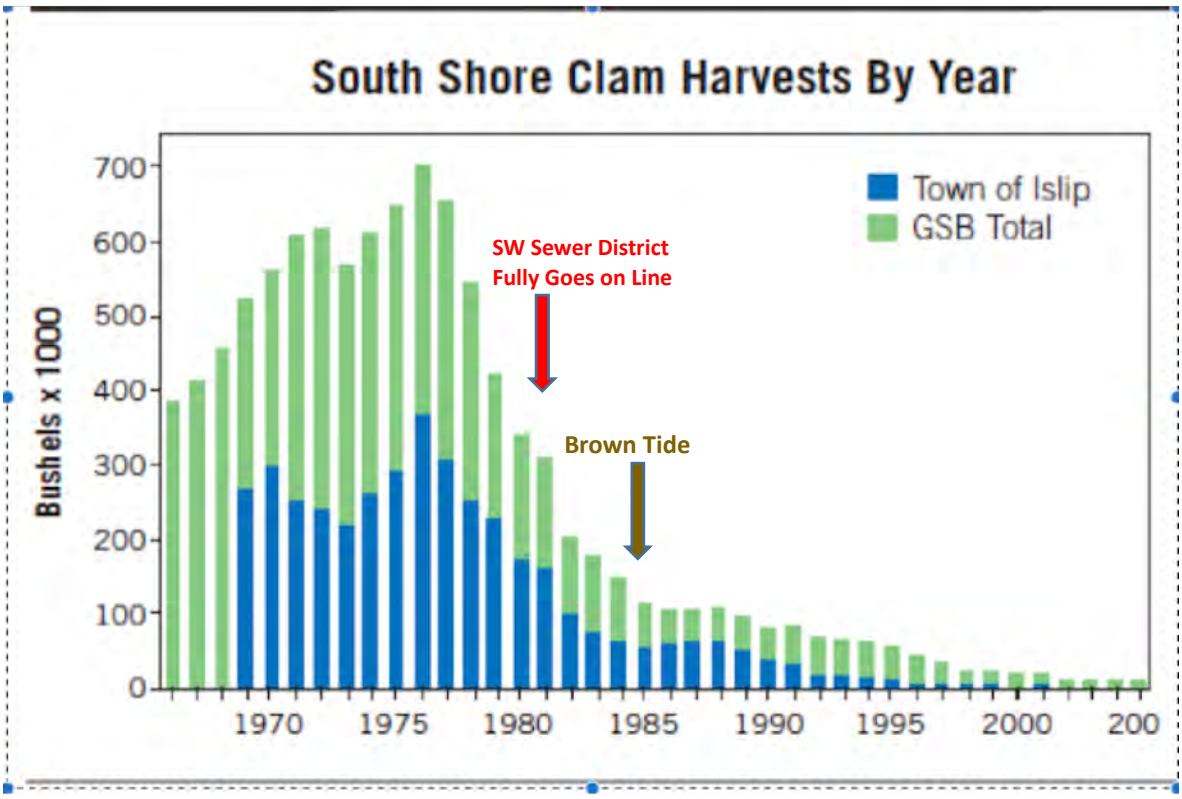
Suffolk County Wastewater Management Program for the Reduction of Nitrogen Loading from Wastewater Sources

Prepared: September 4, 2019
Phase 1 -Comments
With Addendum

*"If **septic systems** are causing harmful algae blooms and killing clams and killing fish –then why after 35 years hasn't their elimination and sewering solved the problem?"*

*"We should not attempt to control harmful algae by **starving the bay of nutrients**."*

*"Further reducing the nitrogen loading to our bay will **decrease** shellfish populations and **increase** the potential for harmful algae blooms."*



SWP Review Group:

Peter Akras PE, MSPH

Stephen Costa PE

Jack Mattice PHD

Robert Nuzzi PHD

Royal Reynolds PE

John T. Tanacredi PHD

Roger C. Tollefsen B.Ch.E.

Martin Trent

Electronic Copy available at: http://tiny.cc/SWPreview
With Guide: http://tiny.cc/SWPreviews
Addendum: http://tiny.cc/SWPaddendum

Contact Persons:

Concerning Wastewater Management (sewage disposal)
Royal Reynolds
rrvreynolds@optonline.net
631 885-1926

Concerning Impact on estuaries (HABs, Shellfish, etc.)
Roger Tollefsen
nyseafood@msn.com
631 740-0381

About the Group: Each member has brought their own area of expertise and experience to this review. A function of the Team has been to listen, challenge and critique each other, in order to assure a balanced perspective.
The SWP in some instances has stated its conclusions as absolutes while there are clearly uncertainties. Contrary to the conclusions drawn by the SWP and DGEIS, the data and the literature suggest that many of the SWP recommended actions may indeed have negative effects.
The SWP Review Group recognizes the complexity of systems but uses definitive language to encourage the reader to explore the alternative perspectives suggested by research and data.

General Dissent of the SWP:

During the course of preparation of the SWP, individuals have offered information that is counter to the pre-conceived notion that nitrogen is the number one villain of our bays. In response, it was pointed out in several organizational meetings that these individuals must be wrong. The ground swell of organizational support for the SWP is based on the belief that it will protect our drinking water, eliminate HABs and return our bays to some previous, undefined level of productivity. Those who support the SWP have assumed that it will be the vehicle to achieve these goals; however, the SWP does not state or demonstrate that it will.

In Memory:

During the course of the last year we lost three of our colleagues, who had a tremendous impact in the field of Public Health and Wastewater Treatment. They are Robert Villa, Aldo Andreoli and Steve Costa; God bless.

Introduction

On March 10th of this year we completed a review of the sewage disposal practices in Suffolk County, which had been undertaken several years ago. We evaluated the sewage disposal practices in Suffolk County and presented a report with recommendations to County officials with a long range strategy and plan for sewage disposal. [Policy Report] This report coupled with two other reports we did [Eastern Bays Review & LICAP Report Review] served as primary references for this review of the DGEIS and the Subwatershed Wastewater Plan; and they are linked in our written comments. It is recommended that the reader familiarize him or herself with these documents.

With only about a month to review and prepare comments on the 800 pages of the SWP, 500 pages of the DGEIS and the 1500 pages of supporting documents, we were restricted by time and had to center our focus on the DGEIS at hand and the SWP as it related to the DGEIS. Finalization of this report and comments is pending the results of the public hearings. [Addendum at: http://tiny.cc/SWPaddendum]

Summary

Based upon this review we found the DGEIS and SWP to be deficient on several levels. As a group of scientists, engineers and public health experts, what we found most puzzling was the focus on nitrogen as being the trigger for all the ills of the groundwater supply and estuaries. The portrayal of nitrogen being on the rise and needing "remediation" appears to be a common theme and pattern throughout the SWP and DGEIS.

According to the DGEIS and SWP nitrogen is the cause of fish kills, the decline of clam populations and harmful algae blooms; and has it affected the health of Suffolk County residents. When we reviewed the SWP and other references, we found no cause and effect to these claims. Instead of proving cause and effect, the DGEIS and SWP inferred and implied connections with nitrogen, misinterpreting data, failing to consider information supporting alternative causal hypotheses and using computer programs (models) to bolster the flawed hypothesis. The most outstanding flaw of the SWP was its changing of the assumptions used to simulate and predict wastewater nitrogen loading to the groundwater and bays. Assumptions were specifically changed in the SWP; more than doubling the predicted nitrogen loading from previous reports (by the same consultants). **This incorrectly skewed the results and conclusions.** In addition, data was manipulated for the SWP to depict rising nitrogen levels throughout the estuaries, while other analyses (including ours) indicated that the nitrogen concentrations were actually on a downward trend. The DGEIS failed to identify a series of negative impacts, caused by *The Proposed Action.* The DGEIS did not take in to account the negative impact that nitrogen reductions would have on the ecosystem. **In effect, The Proposed Action sets out to starve all algae without taking into consideration the nutritional needs of the estuaries**. The DGEIS did not consider that bodies of water with reduced nitrogen loading, historically have the highest incidences of harmful algae blooms. The DGEIS did not consider that two of our largest estuaries have among the lowest nitrogen loads on the east coast. Because the SWP ignores the living resources of the bays, it appears that the SWP strategy for the control of harmful algae is to simply starve them of nitrogen. **But it is unrealistic to expect that starving harmful algae will not affect the rest of the ecosystem.** The DGEIS did not consider that **Mecox Bay (LI)** has perhaps the highest density of oysters in the eastern United States. It also has **nitrogen concentrations at least 10 times higher than the eastern bays but has never experienced a HAB.**

The SWP provides no short range strategy to deal with the hundreds of thousands of existing septic systems that need immediate help to correct failing and dangerous situations. The SWP

offers no practical, cost-effective or short term strategy to deal with this massive problem. **The SWP is deficient by promoting the expansion of sewer districts without placing control on growth (increased wastewater flow) within the districts**, most of these sewer districts discharge to coastal waters through outfalls**.** The SWP falls short by not establishing a policy that prevents further increases in discharge and reductions in recharge; or requiring SCDHS to take action in this respect. It does nothing to prevent expansions of uses (increase in wastewater flows within the districts), which result in increased discharges by default. It leaves the protection of the water supply up to the local zoning and planning boards, which has had devastating effects in the past. As a result, enactment of "*The Proposed Action"* sets the stage for **negative impacts** on the groundwater supply and reduction in base flow. The DGEIS should have determined that leaving the fate of the water supply in the hands of zoning and planning boards would result in a **negative impact**.

The SWP has determined that areas with less than 10 feet to groundwater are priority areas for advanced sewage treatment. However, the SWP provides no meaningful evidence as to why this is necessary. To the contrary our review shows that these areas actually provide the best opportunity for natural denitrification to occur. In addition, the SWP has provided no evidence that pathogens have any better survival rate in these areas. The SWP has unnecessarily designated areas with less than 10 feet to groundwater as "priority areas" creating a **negative impact** on homeowners in those areas.

The sponsors of the SWP have labeled nitrogen as "**Public Enemy #1**" and the conventional sewage disposal systems as **"Monsters"**; as we will see in this review of the DGEIS, this is far from the truth and to the contrary, nitrogen and conventional systems are essential components of a balanced sewage disposal strategy in Suffolk County.

*****

Comments on the DGEIS Conclusions (as presented on pages 1-2 & 1-3 of the DGEIS)

The following are comments on some of the DGEIS conclusions which were presented on pages 1-2 & 1-3 as "*A summary of the key conclusions based on the assessments within this Draft GEIS*". Our comments on the "key conclusions" will include a statement of the conclusion (as presented in the DGEIS) followed by the comments.

Conclusion #1: "*Suffolk County groundwater and surface water resources have been impacted from nitrogen introduced by sanitary wastewater.*"

Comment: Obviously, wastewater treatment by-products that are discharged into the groundwater can have an impact; whether that impact is beneficial, harmful or neutral is the issue. Stating that there is an impact on water, in and of itself, is not meaningful and should not be listed as a "key conclusion". This is like stating "oxygen has impacted air"; its stating the obvious, but not useful in the context of a DGEIS conclusion.

In any event, the reality is that **the SWP has not shown harmful impacts caused by nitrogen loading, which is a necessary foundation for the plan to be credible.** Rather than presenting empirical evidence of cause and effect, the plan depends on computer models to speculate on what nitrogen levels will be in the distant future (and even what they are today). The computer models predict rising levels of nitrogen in our groundwater and surface waters; and then uses simulations to show how sewers will lower them. To solve the perceived problem of nitrogen loading the SWP's first choice is sewering practically all of Suffolk County (except for open spaces); defaulting to I/A OWTSs as a backup plan. As will be discussed later in this report we see that these speculative modeling solutions do not address the necessary "ecological end points" and that the "solutions" will be harmful in the short and long run and present **negative impacts**.

"Harmful impacts", caused by nitrogen loading, have not been demonstrated by the SWP. a

Conclusion #2: *"The more than 380,000 existing onsite wastewater disposal systems (OSDS) that exist in Suffolk County are not designed to address nitrogen removal. "*

Comment: This statement is incorrect and misleading. Conventional Onsite Sewage Disposal Systems (OSDSs), consisting of a septic tank and leaching facility, are designed to treat wastewater and they are designed to remove nitrogen; the extent to which they do this depends on their individual design and location. (It should be noted that a large proportion of the 380,000 existing systems are in need of septic tanks and repairs in order to bring them up to conventional standards so they can properly treat for nitrogen and enhance their operation and improve safety). b This SWP conclusion about nitrogen removal is one of the most important flaws in the SWP. By accepting this conclusion, the County has disregarded the denitrification processes that occur with Conventional Onsite Sewage Disposal Systems and therefore they have not accurately accounted for them in the wastewater plan. This disregard has resulted in the use of inaccurate nitrogen loading data in the SWP, which in turn has resulted in inaccurate conclusions about nitrogen loading and the impacts to Suffolk County's water resources (groundwater and surface waters). In the SWP the county has extensively used computer modeling to predict the effects of nitrogen loading on the water resources, and by inputting wrong data and assumptions into their models, their results are wrong.

All the nitrogen loading calculations and conclusions used in the SWP are in question

The fundamental task the County has failed to do in the SWP is to accurately account for the nitrogen loading from conventional Onsite Sewage Disposal Systems (OSDSs), including the degrees of denitrification that occur in the system and surrounding environment. c

The following table (Table 1) depicts various stages of treatment and denitrification used in the SWP and compares them with a previous study done by Stony Brook University (SBU); the consultants for these two studies are the same. A comparison shows that in 2016 the consultants predicted a 66% reduction in nitrogen loading as a result of treatment with conventional onsite sewage disposal systems; then three years later in the SWP they reduced this reduction to as little as 27%. This had the effect of more than doubling the septic nitrogen load, with the stroke of a pen. As a result, the perceived impact of nitrogen from conventional systems doubled. **This incorrectly skewed the results and conclusions** in favor of sewering and away from the use of conventional disposal systems.

Table 1 -
A Comparison of Nitrogen Reductions for Conventional Onsite Sewage Disposal Systems using data from the 2016 Stony Brook University report, *Long Island South Shore Estuary Reserve Eastern Bays Report* (Eastern Bays Report) and the Suffolk County 2019 Draft *Subwatershed Wastewater Plan* (SWP).

Stages of Treatment (1)	2016 Eastern Bays Report % Nitrogen Removal	2019 SWP % Nitrogen Removal
Septic Tank	7%	6%
Leaching Field	35%	10%
Septic Plume	35%	0%
Aquifer	15%	0% for glacial outwash area 15% for Moraine area (2)
Hyporheic zone	0%	10 – 15% (use 15%) (4)
Total % Nitrogen Reduction (compounded) (3)	66%	27% for glacial outwash area 37% for Moraine area

(1) Terminology used is from the Eastern Bays Report (page 43)
(2) SWP specifies 0% denitrification in the glacial outwash plain and 15% in glacial Moraine (ES-Section 2.5.1)
(3) Reductions have been compounded as per Suffolk County correspondence.
(4) In lieu of empirical data for hyporheic denitrification, SWP used estimates from a wetlands study (Hamersly, 2001) to estimate the denitrification by hyporheic zones in Suffolk (SWP Section 2.1.5.1.5). We used the 15% estimate for the purposes of calculations in this comparison.
(5) Note this Table does not include natural denitrification that may occur in the riparian zone, where shallow septic systems and bog layers can provide conditions conducive for natural denitrification

According to the SWP, these nitrogen removal assumptions were changed based upon *"a consensus of the Nitrogen Load Model Focus Group"*. The change in the "Moraine Aquifer" nitrogen reduction was from 35% to 15%. This was based upon a study by C. Young in 2013 [Young Report], which

used the ratio of Nitrogen gas to Argon gas to predict the 15% denitrification in the Northport area (glacial Moraine area). The SWP then applied this number across the County and then assumed the glacial outwash area had less viable conditions for denitrification and reduced those areas to 0%. [ES-2.5.1] Such a drastic change, based upon the results of one study, using a computer model is not good science and poor engineering. Confirmation of these results for the glacial Moraine and further study of the glacial outwash plain should have been in order, prior to reducing denitrification levels to 0%. The 0% glacial plain assumption is illogical and does not take into account the reasonable-certainty that additional denitrification occurs in this zone, especially in the riparian zone along the south shore.

Naturally occurring denitrification in coastal areas were ignored or underrated in the SWP

d

In respect to this, it is well documented in the Suffolk County Department of Health Service's records that extensive layers of subsurface black peat (bog) exist along the south shore, which would be conducive to promoting substantial groundwater denitrification. Such peat layers appear to provide the necessary dissolved organic carbon source, that when coupled with low dissolved oxygen (DO) levels and increased detention times (traversing peat) provide a greater opportunity for for natural denitrification in coastal areas, especially in shallow groundwater areas near the shoreline. This phenomenon is further discussed in our May 6, 2018 report[Eastern Bays Review page 4] In addition, Figure 1 (next page) is a schematic demonstrating the expected mechanism for septic effluent and groundwater denitrification in a shallow groundwater area.

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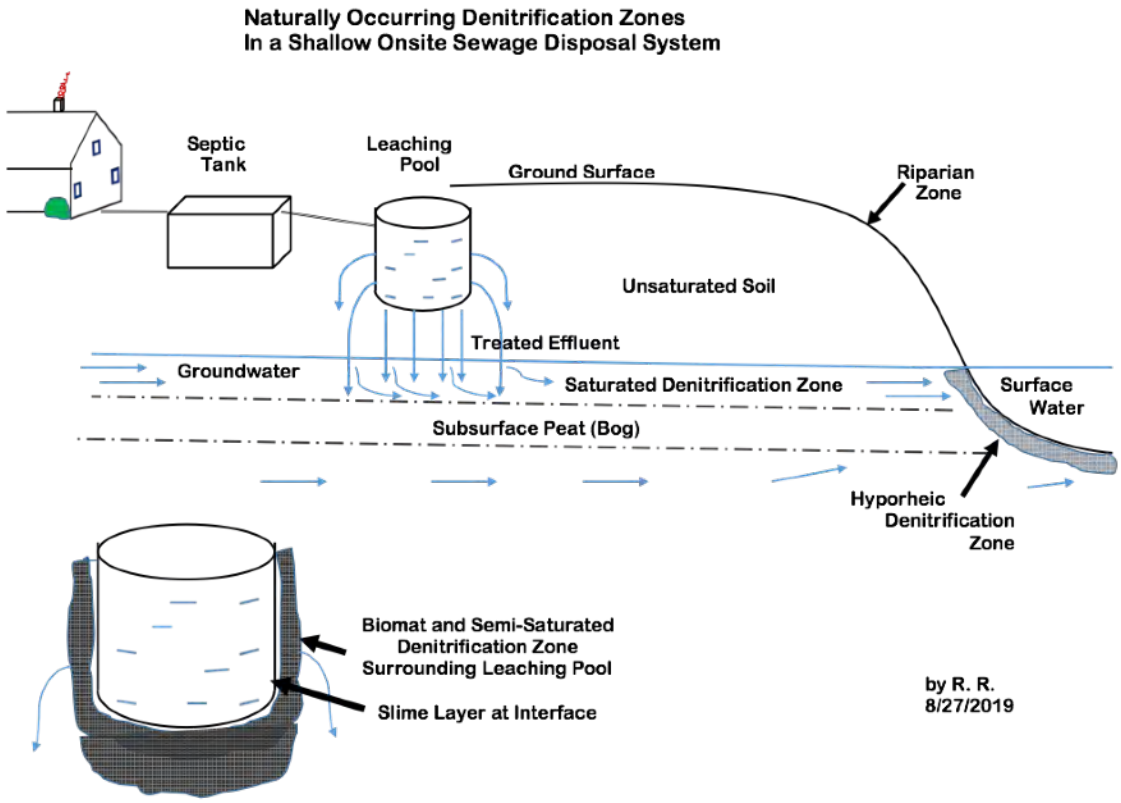
Figure 1



Further exaggerating the nitrogen loading from conventional disposal systems, the SWP changed the "leaching field" nitrogen removal from 35% to 10%. The original 35% nitrogen removal through a leaching field was documented in the Eastern Bays Report [SBU Report] a Suffolk County Department of Health Services Study by Andreoli et al, 1979. The justification for this 25% change was not apparent in the SWP and must be vetted before being applied across the County.

To address the nitrogen removal due to hyporheic zone denitrification, a 10 to 15% estimated reduction for hyporheic denitrification was applied in the SWP, based on a wetlands study done in Massachusetts (Hamersly, 2001). [2.1.5.1.5 Denitrification Effect of Coastal Wetlands and the Hyporheic Zone] These estimates (assumptions) were used by the SWP instead of the findings from local studies here on Long Island, which addressed hyporheic denitrification (e.g. Durand, 2014 and Slater, 1987). Durand showed 24 to 32% denitrification through the most influential hyporheic zone in the Forge River (Chapter 5). [See Durand Report] [Slater Report] Furthermore, in Chapter 9, the SWP recognizes that it does not have a handle on the effect of hyporheic denitrification and states:

> *"**There is considerable uncertainty regarding denitrification through the hyporheic zone** as the denitrification rate is spatially variable, even within the same water body. Denitrification through the hyporheic zone was included in the subwatershed-specific nitrogen load*

development with an estimated attenuation rate through wetlands, in acknowledgement of its potential importance on a site-specific basis. If the impact of the hyporheic zone is to be further considered, discrete subwatershed-specific sampling would be required to provide site-specific attenuation rates. This may be warranted for subwatersheds with high nitrogen load reduction goals, to further refine the load reduction targets."

In light of this information, **the results and conclusions of the SWP have been skewed and must be discounted.** The DGEIS cannot make a determination in favor of the SWP until the correct nitrogen loading assumptions are determined; this is the foundation of the plan, which is based on the nitrogen loading. The SWP has given no evidence that any empirical studies have been done on existing conventional sewage disposal systems to justify the assumptions used. In addition, the assumptions the SWP did use, were unfounded or incorrectly applied, reflecting poor scientific procedures. It was reported that the County had planned on doing extensive testing of existing conventional disposal systems as part of this process, but apparently decided not to. The adoption of the SWP can not proceed accordingly.

In addition, based on the information provided, the conclusion that "*The more than 380,000 existing onsite wastewater disposal systems (OSDS) that exist in Suffolk County are not designed to address nitrogen removal."* is **incorrect** and must be removed from the DGEIS.

The DGEIS should consider adding this statement:

Many of the 380,000 existing onsite wastewater disposal systems (OSDS) that exist in Suffolk county are in need of repairs, including septic tank additions and new leaching facilities, in order to bring the systems up to conventional standards, so they can maximize treatment for nitrogen, improve their operation and address safety concerns.

Conclusion #3: *The SC SWP (Appendix B of this document) evaluates the potential benefits of using Innovative/Alternative Onsite Wastewater Treatment Systems (I/A OWTS) and provides a recommended countywide roadmap that describes how, when, and where to use I/A OWTS, including proposed revisions to Article 6 of the Suffolk County Sanitary Code to accommodate their widespread use.*

Comment: This is not a "key conclusion", but rather a statement indicating where the reader can find information on I/A OWTSs. It states no environmental conclusions on the subject and should be removed as a conclusion. (It is perhaps better suited for an introduction or the table of contents.)

In any event, the SWP evaluation of the *benefits of using Innovative/Alternative Onsite Wastewater Treatment Systems (I/A OWTS)* is flawed and the Proposed Action will result in a negative impact(s).

The DGEIS should have more closely reviewed the following statements from the SWP (Section 2.2.2.2) when determining **negative impacts**.

Statements: (1) ***Figure 2-52*** *shows the 20-year cost per pound of nitrogen removed for each of the wastewater treatment-based nitrogen removal approaches, based on the specific Suffolk County-based costs identified above.*

*(2) Conventional OSDS are the most expensive treatment option per pound of nitrogen removed***.**

Figure 2-52

Figure 2-52 Comparison of Nitrogen Removal Costs for Wastewater Treatment Alternatives

Comment: These statements and graph indicate that the conventional sewage disposal system will be the least cost effective for nitrogen removal; **however**, a cost analysis to show this or the methodology was not evident in the SWP or the DGEIS. The *"costs identified above"* in the statement, actually showed the conventional system (OSDS) to be the most cost-effective installation. This omission, if correct, results in a misrepresentation of conventional systems and will effect the outcome of the DGEIS. As already discussed, the conventional systems remove nitrogen and have benefits over other methods of sewage disposal that have not been addressed in the SWP. As discussed later in this report, this omission will lead to **negative impacts** when the Proposed Action is initiated.

Conclusion #4: *The SC SWP provides recommended revisions to Article 6 of the Suffolk County Sanitary Code and to Appendix A of the Standards for Approval of Plans and Construction for Sewage Disposal Systems for Other than Single Family Residences to facilitate the more widespread use of "Appendix A" modified sewage disposal systems.*

Comment: Likewise, this is not a "key conclusion", but rather a summary of what the SWP has attempted to do with Article 6 and Appendix A. It draws no environmental conclusions on the subject and should be removed as a conclusion. (It is perhaps better suited for an introduction or summary.)

Conclusion #5: *The SC SWP provides initial recommendations for a variety of* ***other wastewater management strategies*** *that would ultimately yield a long-term, sustainable strategy, to address pollution emanating from untreated wastewater sources in Suffolk County.*

Comment: This statement concludes that *"**other** wastewater management strategies would ultimately yield a long term, sustainable strategy to address pollution emanating from untreated wastewater sources in Suffolk County."* This conclusion should be more specific as to what is meant by "other". Other than what? And what "pollution" is the SWP "addressing"? The statement also

uses the term "*untreated wastewater sources*", which is undefined. There are no "*untreated wastewater sources"* in Suffolk County; and if there were, they would be in violation of numerous codes. If the SWP is referring to conventional onsite sewage disposal systems (also known as onsite wastewater treatment systems) as being *untreated wastewater sources*, then the SWP is incorrect and does not understand the treatment processes involved in conventional systems. [See Policy Report pages 4-6] The SWP should correct this misstatement and include conventional systems in the SWP strategies. Until clarified, a specific analysis of this conclusion will have to wait; however, there are some comments that can be made about the **negative impacts** of the SWP *wastewater management strategies*.

Some of the strategies being presented by the SWP will be harmful in both the long and short run and they will not address the wastewater disposal needs of the residents of Suffolk County. In formulating strategies, the SWP should have considered the immediate needs of the 380,000 households with conventional onsite sewage disposal systems. Many of these systems have dangerous block leaching pools (subject to collapse), lack septic tanks and/or are in hydraulic failure ("backing up"). **The SWP offers no practical, cost-effective or short term strategy to deal with this massive problem**.

The SWP fails to recognize conventional systems as a viable strategy – results in a negative impact

The failure of the SWP to include conventional systems in its wastewater management strategy results in a **negative impact**. The SWP appears to be fixated on the perceived "nitrogen problem" and fails to demonstrate an understanding of the dire situation that homeowners are put into when their septic systems fail and the public health consequences. With a failed system, homeowners can not flush toilets, do laundry, wash dishes, bath or use other water in their homes. In the meantime, homeowners are adding all types of chemicals to try and fix their problems, when what they really need to do is upgrade their systems in a regulated and cost effective manner. The decision on repair and maintenance is usually a knee-jerk reaction to the failure; with the homeowners under pressure to make a quick decision. Sometimes it as simple as unclogging a pipe; but more likely with older systems, the problems stem from clogged or collapsed leaching facilities. There are thousands of existing systems that do not have septic tanks, have dangerous block pools (are subject to collapse) and require continuous treatment to prevent sewage back-ups. When offered solutions, the homeowner will most likely opt for the fastest and least expensive solution and not necessarily the best. The SWP should consider this issue as a priority.

The SWP does not propose practical or cost-effective help for this problem. As a result, the homeowners will be left to their own demise, until costly sewers or advanced treatment systems become available (sometime in the future). It is understandable, when a homeowner is offered an $800 chemical "treatment" (e.g., adding sulfuric acid) versus a $3,000 leaching pool addition or a $7,000 total replacement, they are more apt to go for the $800 "fix". Unfortunately, "you get what you pay for"; the $800 chemical treatment may buy another few years of life from the sewage disposal system, but subsequent chemical treatments will be less effective over time, until there is irreversible clogging; requiring structural additions. Besides being a short term solution to the sewage disposal problem, if not used properly, chemical treatments can be harmful to the septic system and groundwater supply. The SWP should consider this and formulate a strategy to educate homeowners and aid them in maintaining their conventional systems; so the systems remain viable and cost effective.

The SWP needs to address more cost effective and practical help for homeowners with pre-existing OSDSs. Article 6 of the Suffolk County Sanitary Code, appears to be encouraging the "upgrade" of older systems, though they are not exactly offering help. Article 6 now states that after July 1, 2019 you need a permit to upgrade an existing system, if it fails. What is meant by "upgrade" is open for interpretation. Installing septic tanks, where none exist, and replacing failed leaching pools would be a positive step forward, both to the homeowner and the environment. **This should have been addressed in the SWP; it was not.** Such upgrades will be expensive (though not as expensive as installing the I/A OWTSs or sewers); and homeowners need support, both financially and technically, to upgrade their systems. Rather than septic systems being excluded from grant programs, and focusing only on sewers and I/A OWTSs, the SWP and Suffolk County should support the upgrade of the thousands of existing sewage disposal systems, which have outlived their expected lifetime and which need replacement and upgrading. Upgrading these systems to conventional standards is an alternative that in many situations will improve wastewater treatment and provide more practical benefits than installing I/A OWTSs or sewers. Such fundamental upgrades will improve the ability of the septic systems to treat contaminants such as nitrogen, COD, BOD and pathogens and provide better access for maintaining and monitoring the systems. Considering the benefits of conventional systems, the SWP should include a program for conventional systems in its strategy; otherwise, the unaddressed problems will continue for decades. In this respect, **The Proposed Action, as is, will have a negative impact on the quality of life, safety and public health of the residents of Suffolk County; and the DGEIS should include it as such.**

g

The SWP sewering strategy will have negative impacts

The SWP sewering strategy will have a **negative impact**. Prior to accepting the SWP and its DGEIS, the public and officials should look to the past. The primary driving force for sewering Nassau and Suffolk Counties has been economic development. With the installation of sewers, properties have been more intensely developed, creating higher density projects and increasing opportunities for developers. When sewers are installed, the limits on development, imposed by the limitations of on-site sewage disposal systems, are removed; and developers are freed to seek higher density zoning and increase the population densities and size of businesses. Historically, the installation of sewers has led to more urbanized environments. The urbanization of Queens and Nassau County are prime examples of this process; as sewers and poor planning have turned these once rural communities into high population density areas. As a result, it is no surprise that Queens "ran out of water" and Nassau is facing a water crisis; both exceeded their sustainable yields. Previous bad decisions about sewage disposal have resulted in the depletion of our groundwater supply and have caused harmful impacts on our estuaries. [Reference LICAP Report Review, pgs. 3-6] The SWP recommends more of the same. In this respect, *The Proposed Action* (sewering) *will have a **negative impact** on our water supply and quality of life.*

The SWP does not consider the nutritional needs of the ecosystem endpoints

Conclusion 8: *"Water quality improvement would support a healthy aquatic ecosystem."*

h

Comment: This "conclusion" is a gross assumption. Use of the words "improvement" and "healthy" are qualitative (subjective) terms that neither define the goals nor express the outcome.

Managers realize that bays are complex and almost universally use management options that consider an entire ecosystem. Ecosystem based management is an integrated management

approach that recognizes the full array of interactions within an ecosystem rather than considering single issues, species, or ecosystem services in isolation.

In contrast, the SWP's specifically states that the Plan ignores the interactions of "*the presence of submerged aquatic vegetation, pathogens, fish kills, populations of finfish and shellfish"*. The SWP only considers the specific issue of how nitrogen reduction **may** affect certain species of algae. Because the SWP has not considered the nutritional needs of the ecosystem endpoints, it is impossible to determine the required nitrogen load and unintended consequences are likely.

Some of the unintended consequences of "successful" nitrogen reduction efforts include collapsed shellfish populations, dramatic losses to the traditional baymen community and increased incidences of harmful algal blooms.

The implementation of the Proposed Action (if it is successful in its goal of nitrogen reduction in the estuaries) will likely result in a negative impact to the aquatic ecosystem if the major form of nitrogen available is preferentially utilized by harmful algae".

Until we agree on its intended use, we cannot calculate the nutritional needs of an estuary. Shellfish require nutrients but the SWP priority ranking system explicatively fails to consider their nutritional needs. The SWP must consider the other endpoints listed above not just nitrogen and HABs.

The SWP plans to starve the bay of nutrients

i

Conclusion 9. *"Implementation of the Proposed Action would not result in a negative impact to the natural environment, or historic and archaeological resources located throughout the County. "*

Comment: The conclusion is inaccurate: *The Proposed Action* may actually have a **negative impact** to the natural environment. The SWP has proposed Nitrogen as a surrogate for an indicator of the quality of the bay. It proposes that nitrogen loadings be reduced in order to starve harmful algal yet somehow assumes or concludes that this will not affect the rest of the bay's ecosystem. The SWP makes no attempt to consider the nutritional needs of our bays. If the SWP nitrogen reduction goals are pursued, there is a grave danger that Long Island's marine environment and its maritime tradition of seafood harvesting will be destroyed.

A major goal of the SWP was to rank the 136 sub-watersheds so that nitrogen reduction efforts may be focused on those areas having the most severe nitrogen loading and flushing and the presence of harmful algal blooms (HABs). But the Plan explicitly states that "*other criteria were initially considered for incorporation into the sub watershed evaluation but were ultimately not included in the nitrogen load reduction priority ranking due to insufficient data to properly characterize the particular endpoint including presence/absence of SAV, pathogens, fish kills, shellfish*". (ES-36 "Other Factors"). By doing this, **the Plan has distanced itself from the ecosystem that the Public believes will somehow be nurtured.** The things we most value about our bays, being able to swim without concern of pathogens, fish and harvest shellfish are not considered.

The SWP does not address an important question:

Under what conditions do harmful algae dominate the algal community?

For the majority of Eastern Long Island's bays, **nitrogen is the limiting nutrient.** This means that all the nutrients needed for algae to grow are present but the amount of nitrogen determines that growth. **Low levels of nitrogen restrict and can reduce algal populations.**

Shellfish consume algae as food and are capable of filtering great quantities of water. For instance, during the 1970's hard clams filtered the entire Great South Bay every three days. But if that water is low in algae, shellfish will not thrive. When nitrogen was added to a marine body of water, both the microalgal concentrations and the growth of clams increased "providing direct evidence of a link between nitrogen loads and the growth response of clams." (Carmichael, R.H. 2004).

It has been a goal of many environmental groups to increase shellfish populations. Despite millions of dollars and great effort, shellfish reseeding efforts have dramatically failed. The reasons for failure are complex but if nitrogen is targeted to be reduced, managers should consider the following statement: *"Nutrient loading can have significant but complex effects on suspension-feeding molluscs with select species (e.g., oysters and clams) benefiting from eutrophication and other species performing poorly (e.g., scallops and slipper limpets). Future management approaches that seek to restore bivalve populations will need to account for the differential effects of nutrient loading as managers target species and regions to be restored. (Wall, C.C., Gobler, C.J., Peterson, B.J., Ward, J.E. 2013)*

Shellfish remove algae that contain nitrogen from the water but the SWP does not account for that. The nitrogen removed by oyster harvest is similar to that removed by hard clams. (Reitsma, J., 2017) The impact that these shellfish can have on nitrogen loading has been estimated. "The harvest of 3,750 oysters is estimated to compensate for the nitrogen wastes from one person in the watershed" (Rheault, 2008). Another way of saying this is that one person's nitrogen supports 3,750 oysters.

Because shellfish lie dormant when food sources are low but respond to the seasonal blooms of algae, shellfish may be described as "buffers of the bay". If harmful algae are part of the seasonal algal assemblage, shellfish can consume them. However, if harmful algae dominate the algal community, the shellfish will stop feeding and may starve. S**hellfish starvation during a HAB is due to a combination of the toxicity of the HABs and/or the small size of the harmful algae**. j For instance, the Latin name of *A. anophagefferns (Brown Tide)*, translates to a "small sphere capable of causing starvation".

Rainfall and Drought Effect Harmful Algae Blooms

One of the intriguing observations concerning HABs is their relationship to rainfall. Harmful Algae have been known to initiate blooms coincident with low precipitation or drought. Lower precipitation reduces the amount of nitrogen from atmospheric deposition and decreases the ground water flow due to the reduced hydraulic pressure caused by the lack of rain. The nitrogen input from fertilizers and septic systems that is carried through ground water flow to the marine waters also slows. Since the SWP has concluded that groundwater sources of nitrogen represent the majority of the nitrogen loading to our bays, droughts give us a glimpse of how our bay responds to significant nitrogen reductions. It is not comforting to realize that reducing nitrogen promotes HABs!

During periods of increased rainfall, the impacts of fluctuating amounts of nitrogen due to precipitation are amplified when a bay's nitrogen levels are low. These nitrogen pulses can come from precipitation (atmospheric deposition) and the increased ground water flow. In a bay with

low nitrogen concentrations and low populations of shellfish, these pulses can have a significant impact on the seasonal algal blooms that are called an algal succession. Timing may be critical. "*The results of study support the view that moderate nutrient inputs may have a beneficial effect on the functioning of coastal ecosystems, stimulating the taxonomic diversity through the growth of different taxonomic groups and taxa.* (Spatharis et al., 2017)

The algal community is complex. For instance, a twenty-two month study of the succession of algae in Narragansett Bay found at least 138 phytoplankton taxa (species). [Karentz, D. & Smayda, T.J. 1984]. If the seasonal algae are established prior to a nitrogen increase, added nitrogen may increase that population. But if the seasonal algae are too low in population, HABs may be able to out-compete them. It is under low nitrogen conditions that HABs have shown to have competitive advantages over other algae. "The N-uptake characteristics of A. anophagefferens (low Ks and Vmax for NH4+) suggest that this species is well adapted to low-nutrient environments" (Lomas et al., 1996). k

The SWP should avoid conditions that cause low levels of nitrogen rather than encourage it

Rain cannot be controlled; however, managers should be looking to avoid the conditions that cause low levels of nitrogen rather than promote management plans that encourage it.

Long Island's eastern bays have some of the lowest levels of nitrogen loading of any estuary in the United States, have lost 95% their shellfish and are the international epicenter for HABs. **If we further reduce the nitrogen loading to our bay, we will decrease shellfish populations,** increase the effect of intermittent nitrogen loadings and <u>increase</u> the potential for HABs.

Until we agree on its intended use, we cannot calculate the nutritional needs of an estuary. Shellfish require nutrients but the SWP priority ranking system explicatively fails to consider their nutritional needs. Instead, it relies only on nitrogen loadings, flushing rates and the presence of HABs.

Because the SWP ignores the living resources of the bays, it appears that **the SWP strategy for the control of harmful algae is to simply starve them of nitrogen. But it is unrealistic to expect that starving harmful algae will not affect the rest of the ecosystem.** l

Reducing nitrogen loads has not worked

Despite the mantra that nitrogen must be reduced at all costs (or perhaps for 4 Billion Dollars), nitrogen reduction has not always reduced HABs; and shellfish populations have been negatively affected. Some examples where **"successful" nitrogen reduction has not yielded the expected results** are given below. m

In 1977, over 8,000 baymen reaped the bounty of a major hard clam population in the Great South Bay over 600,000 bushels of hard clams were harvested. But there was little concern as to why the shellfish populations were thriving. After the creation of the Great South West Sewer District, nitrogen loadings to the western part of that bay were reduced 70%. Overall, the GSB nitrogen loadings were reduced by 40%. Contrary to what the SWP now suggests should have happened, the opposite occurred; shellfish populations collapsed and Brown Tides were observed for the first time. Later a cadre of twelve scientists (Anderson et al. 2008) wrote "*The off-shore rerouting of sewage previously discharged directly into the western Great South Bay during the early 1980s led to lower levels of dissolved inorganic nitrogen there, thus creating a nutrient regime which reduced*

total annual phytoplankton biomass, but favored dominance by A. anophagefferns (Brown Tide) as blooms began to first develop in the late 1980s." In layman's terms, the sewer system reduced the food upon which the clams depended and **upset the nutrient balance to favor the Brown Tide**. In hindsight, the decision to reduce nitrogen to the GSB was not a good idea for the bay.

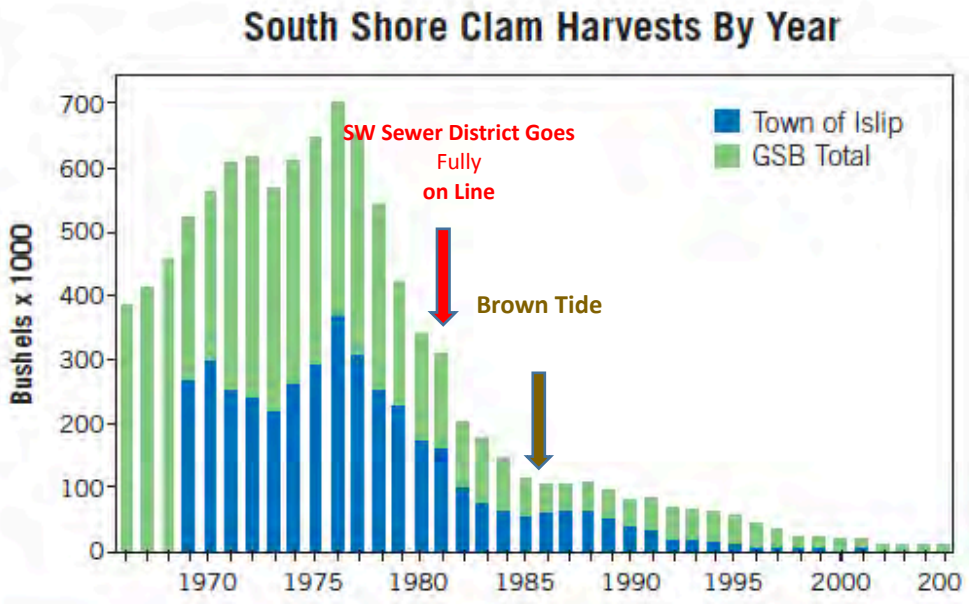


Figure 1. Hard clam (*Mercenaria mercenaria*) commercial landings from Great South Bay (GSB) and those limited to the Town of Islip, NY (modified from Kraeuter et al. 2008).

Sarasota Bay recently reduced its nitrogen loading by 64%. It eliminated 75% of its septic systems, upgraded sewer systems to deep-water recharge wells and used some of the treated effluent from the sewer systems to irrigate golf courses, citrus fruits and lawns. The efforts were documented in the updated 2014 Comprehensive Conservation and Management Plan (CCMP) where their nitrogen reduction success was entitled "The Voyage to Paradise Reclaimed". In 2018 "*Sarasota declared a state of emergency amid a toxic red tide outbreak that killed area marine life, stifled tourism and sickened people.*" Sarasota Bay was closed for recreational use for the entire winter season. The "successful" reduction in nitrogen loading did not prevent the HABs.

Peconic Bay drastically reduced commercial duck farming, eliminated the processing of menhaden (bunker) and upgrade sewer systems. It now has the lowest level of nitrogen loading of any major estuary in the United States. But its shellfish industry has declined by 90% and Peconic Bay experiences repetitive HABs. "*An examination of spatial and temporal patterns of concentrations of A. anophagefferens cells (Brown Tide) and inorganic nutrients indicates that blooms occurred when inorganic nutrient levels were low*" (Cosper et al, 1989).

The chart (below) was adapted from a SOMAS (School of Marine and Atmospheric Sciences) slide presentation. New information was added as it became available. When a literature search provided evidence that an estuary had experienced an HAB the results were added to the right

column. The shading of the right column highlights that HABs are predominately associated with those marine water bodies that have the lowest nitrogen loadings.

Nitrogen Loading of some major estauries or water bodies

	N Load (kg N/ha yr)	Reference	Harmful Algal Blooms
Sage Lot Pond, Massachuetts	14	Valiela et al, (2000a)	
Peconic Bay, New York	19	Nature Conservancy (2014))	1986 to present
Sarasota Bay. Florida 2016	21	2017 After reductions per Albertson	2016 k. breves
Coastal Bays	20-40	Nutrients in Estuaries -NEP (2010)	intermittent in all
Morton Bay, Australia	24	O'Donohue et al. (2000)	1986?, 1995-2002
Bannegat Bay, New Jersey	26-50	Bowen et al. (2007): NEP (2010)	1988-2013
Tampa Bay, Florida	28	Bianchi et al. (1999)	recurring Red Tide - K brevis
Great South Bay, New York	38	Valiela & Kinney (2008)	1986 - present
Sarasota Bay, Florida 1995	56	Bianchi et al. (1999)	
West Falmouth Harbor, Massachusetts	76	Carmichael et al. (2004)	
Venice Lagoon, Italy	130	Sfriso et al. (1992)	
Pensacola Bay, Florida	140	Nutrients in Estuaries -NEP (2010)	
Roskild Fjord, Denmark	204	Nienhuis (1992)	
Chesapeake Bay	210	Nutrients in Estuaries -NEP (2010)	
Bass Harbor, Massachusetts	225	Kinney & Roman (1992)	
Great Bay, New Hampshire	252	Short & Matthieson (1992)	
Delaware Bay	260	Nutrients in Estuaries -NEP (2010)	
Narragansett Bay, Rhode Island	280	Nutrients in Estuaries -NEP (2010)	once during 1985 drought
Quashnet River, Massachusetts	350	Valiela et al. (2000a)	
Waden Sea, Northern Europe	500	Nienhuis (1992)	
Childs River, Massachusetts	601	Valiela et al. (2000a)	
Yaquina Bay, Florida	1000	Nutrients in Estuaries -NEP (2010)	
Jamacia Bay, New York	1093	Benotti (2005)	few - if any

In most cases, researchers have found no link between High nutrient levels and incidence of Harmful algal

An isotopic study revealed that the robust hard clam population of **Narragansett Bay (RI)** obtained half of its nitrogen from treated sewer effluent. "*In the five years after the major Waste Water Treatment Facilities (WWTFs) came on-line for nutrient removal and just over a decade since the process began, net production may have decreased, and the process of oligotrophication begun*".

(Oczkowski et al. 2018) Oligotrophication is the opposite of eutrophication. Nitrogen loadings have decreased by 55% but shellfish populations are in decline. **Managers have now modified the sewer systems' seasonal nitrogen discharge limits to accommodate the growth of the clams.**

Mecox Bay (LI) has perhaps the highest density of oysters in the eastern United States. It also has **nitrogen concentrations at least 10 times higher than the eastern bays but has never experienced a HAB.** Even though a Comprehensive Scientific Study of Mecox Bay (Gobler, 2003) concluded that "*the **high nutrient concentrations resulted in healthy shellfish populations***", the SWP has ranked Mecox Bay as Priority 1 for nitrogen reduction.

Nitrate **additions** during mesocosm and bottle experiments consistently have yielded reduced *A. anophagefferens (Brown Tide)* cell densities relative to competing algae. (Keller and Rice, 1989; Gobler and San˜udo-Wilhelmy, 2001a).
Some phytoplankton such as diatoms often outcompete Brown Tide when inorganic nutrient loads are high.

Looking to how other estuaries have responded to nitrogen loadings without considering all the possible factors that may be involved is of course simplistic. But that is the point. Because the SWP is not considering the complexity of the ecosystems, it cannot predict the outcome of nitrogen reduction.

The SWP conclusion that *"Implementation of the Proposed Action would not result in a negative impact to the natural environment, or historic and archaeological resources located throughout the County."* is not accurate but rather should state:

The implementation of the Proposed Action (if it is successful in its goal of nitrogen reduction in the estuaries) will likely result in a negative impact to the natural environment.

Conclusion #10: ***Human health benefits*** *may be realized with the improvement in water quality as it pertains to possible reduction in harmful algal bloom (HAB) events, improved coastal ecosystems and improved water quality.*

Comment: This statement implies that there is something wrong with the health of the residents in Suffolk County that reducing nitrogen will resolve. The SWP does not describe any diseases or abnormalities that reducing nitrogen will cure ("human health benefit"?). This is an illogical and unfounded statement and should be removed from the SWP. No one is ill from nitrogen poisoning and in fact the nitrogen levels in surface and groundwater are acceptable. This SWP conclusion should be removed from DGEIS and a more appropriate statement, if necessary would be:

Reduction in total nitrogen loading to surface waters and groundwaters would have no impact on water quality that will result in an improvement in human health. n

Conclusion #11: ***Growth inducement*** *would be mitigated by maintaining the current review and approval processes in place on the County and the local levels.*

Comment: This conclusion ignores the reality of the **negative impact** that The Proposed Action will have on **growth inducement**. For the SWP to ignore the negative impacts that such infrastructure projects have on a community's way of life is disingenuous and not in touch with reality; one only has to look at the Town of Babylon and how its zoning broke down and sprawl took over after the SWSD was built; placing a strain on the water supply and putting the plant over capacity. By deferring protection of our water supply to individual zoning boards, the SWP is signing the death warrant for our water supply. The zoning boards are notorious for issuing approvals on a piece meal basis that result in a cumulative increase in population densities and increased wastewater flows. This puts a strain on the existing sewage treatment plants and eventually puts them over capacity. In the meantime, the zoning and planning boards continue approving increases in population densities (wastewater flow) unaware that they are exacerbating the problem. **The SWP is deficient in promoting the expansion of sewer districts without having control on growth within the district**. As previously discussed, the primary goal of the SWP is to promote economic development, and sewering will do this and lead to overdevelopment and destroy what is left of the rural environment and deplete the water supply. Although the SWP assures us that the local zoning boards will prevent urban sprawl and over development (growth inducement), history tells us different; one only has to look at western Long Island to see the impact of unbridled development spurred on by sewers. **The SWP turns a blind eye to the phenomenon of growth inducement caused by sewering and the DGEIS should declare The Proposed Action to have a negative impact.** o

<u>Conclusion #12</u>: *The Proposed Action is forecasted to result in reduced nitrogen levels in untreated water at community wells within 50 years of securing a stable funding mechanism where this same reduction is forecasted to be achieved in two centuries if no action was taken by the County.*

<u>Comment:</u> The community wells are not having a problem with nitrogen; other than the one predicted by computer modeling. As previously discussed, the nitrogen loading assumptions are in question, so the results of this forecast is not dependable. If the nitrogen loading assumptions are less, then there will be less nitrogen loading and no problem; speculated or in reality. The water quality for nitrogen is presently good; and should remain so if population densities are controlled and the policy of allowing treated water to be discharged into coastal waters is halted. The Proposed Action, including "*securing funding*" and reducing nitrogen, will have no beneficial public health effect on community wells and is not cost-effective.

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The following is a discussion of statements in the DGEIS and SWP and the potential negative impacts not identified by the DGEIS.

First the statement is given, followed by comments.

Sobering Statistics (Page 1-9 SWP)

Statement: *Sobering statistics of nutrient related impacts to Suffolk County waters include:*

- *41.2 percent increase in nitrogen in the upper glacial aquifer from 1987 to 2013;*
- *93.2 percent increase in nitrogen in the Magothy aquifer from 1987 to 2013;*
- *10 percent increase in nitrogen concentrations in Suffolk County marine waters in the past 10 years, and more specifically:*
  - *45.7 percent increase in nitrogen concentrations in Long Island Sound harbors;*
  - *53.8 percent increase in nitrogen concentrations in Peconic Estuary enclosed bays;*
  - *60.4 percent increase in nitrogen concentrations in the far eastern south shore bays, and*
  - *30 percent increase in nitrogen concentrations in eastern Great South Bay;*

Comment: These **"sobering statistics"** paint a grim picture of the water quality in Suffolk County waters; or do they? The statistics presented here are indicative of how results can be skewed. For example, let's look at the 41.2% increase listed above. The 41.2 percent increase in nitrogen in the upper glacial aquifer occurred over a period of 26 years. What the 41.2 % does not indicate is that the average nitrogen concentration in the glacial aquifer is only 3.58 mg/l, which is well within drinking water standards of 10 mg/l. In other words, the nitrogen increased approximately 1 mg/l (from 2.53 mg/l to 3.58 mg/l) over a period of 26 years; this is not bad. **The SWP chose to use the 41.2% increase to make things look bad, when they really weren't.** There are numerous examples of this type of manipulation throughout the SWP. Another example is the 93.2% increase in nitrogen in the Magothy aquifer for the same time period, 26 years. **A 93% increase sounds terrible**, **until we look at the real numbers.** The average nitrogen concentration after 26 years is 1.76 mg/l in the Magothy aquifer; well within drinking water standard of 10mg/l. This means the nitrogen concentration increased by .85 mg/l (.91 to 1.76 mg/l) over the course of 26 years; this is not bad. The SWP chose to depict it as a 93% increase to make things look bad; *sobering statistics*!

Furthermore, the SWP claims that the overall increase in nitrogen concentrations for all the marine waters in Suffolk was 10 percent over a ten-year period. This 10% statistic does not help us to draw any useful conclusions, and appears only to be provided to build a case against nitrogen. Lumping all "contributing waterbodies" together does not yield a true picture of water quality or identify the anomalies of localized areas. We also questioned why the SWP only used the last 10-years worth of data for the marine waters and not a longer period of time, for which they had data available. Reportedly, it had to do with the incompatibility of data due to changes in analytical techniques; however previous reports had used all the data and were able to draw conclusions. We decided to take a hard look at the data for several sampling stations in the Great South Bay (see Appendix B in Addendum) and Moriches Bay, in order to see how they compared to the SWP's approach of lumping together "waterbodies" and using a ten-year period of data to develop trends. The results raised questions and concerns.

Below are two graphs from the SWP (Figures 1-5i & 1-5g), showing ten-years worth of data from Great South Bay "waterbodies" and depicting upward trends in nitrogen concentrations (with 23% and 30% increases). The next graph (Figure 5-11) is from the Comprehensive Water Resources Management Plan (CWRMP), and shows over 30-years worth of data from various sampling stations in the bay with an unequivocal downward trend in nitrogen concentrations; the opposite of the SWP results. Figure 3-40 is another graph from the SWP, which is similar to the one from the CWRMP, but showing only 10 years of data; it had similar results to the CWRMP results. **It appears that the SWP choice to lump together sampling station data presented an overall misportrayal of the nitrogen concentrations in the Great South Bay; and masked the existing low concentrations of nitrogen in the bay.**

Figure 1-5i

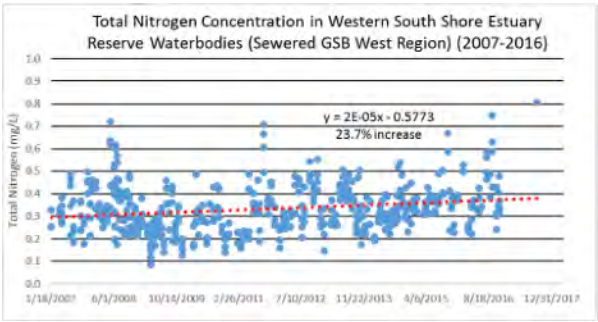


Figure 1-5g

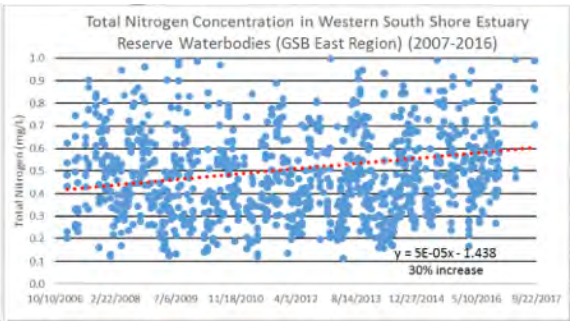


Figure 5-11 (from CWRMP)

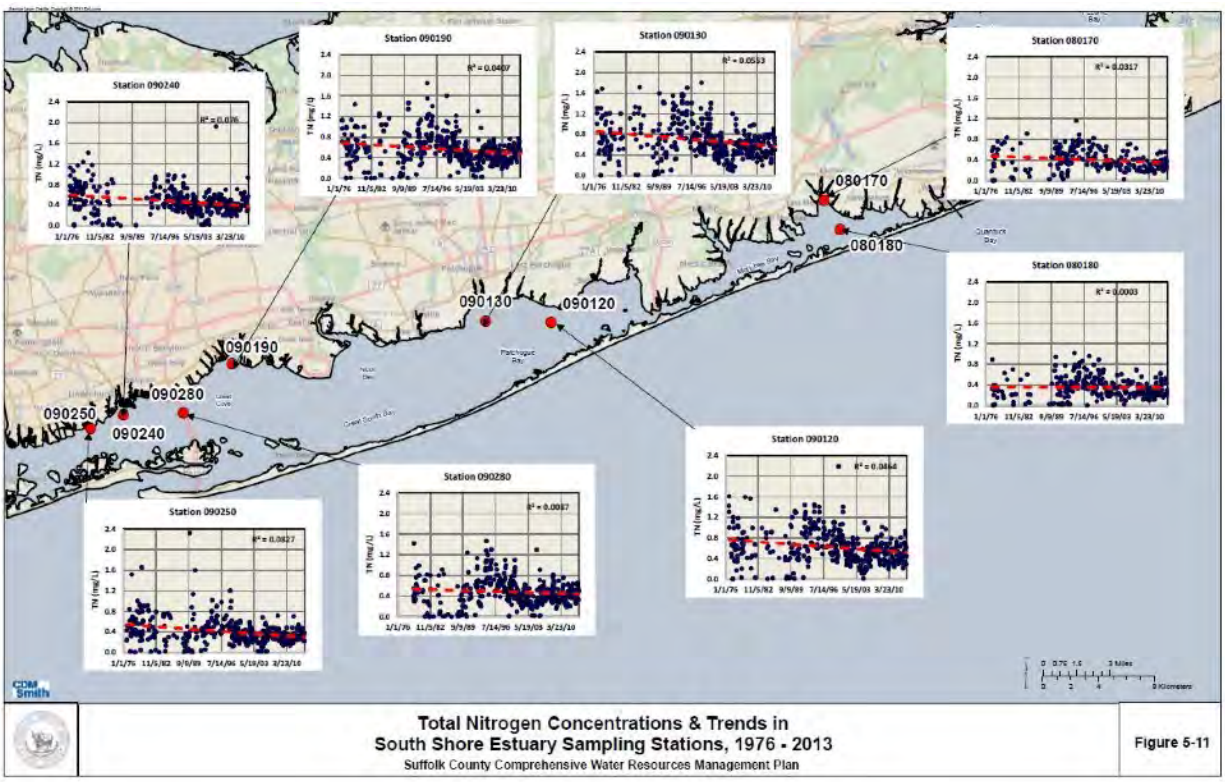
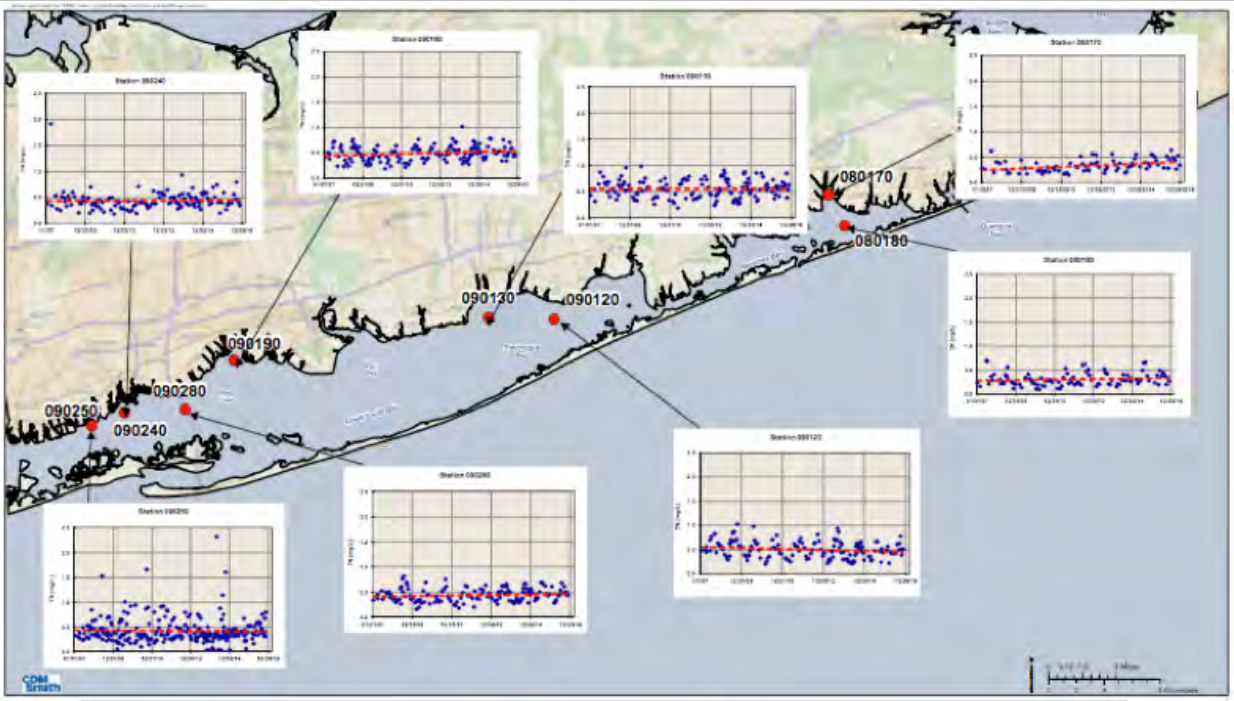


Figure 3-40 (from SWP)



Total Nitrogen Concentrations & Trends in
South Shore Estuary Sampling Stations, 2007 - 2016

Figure 3-40

Figure 3-41

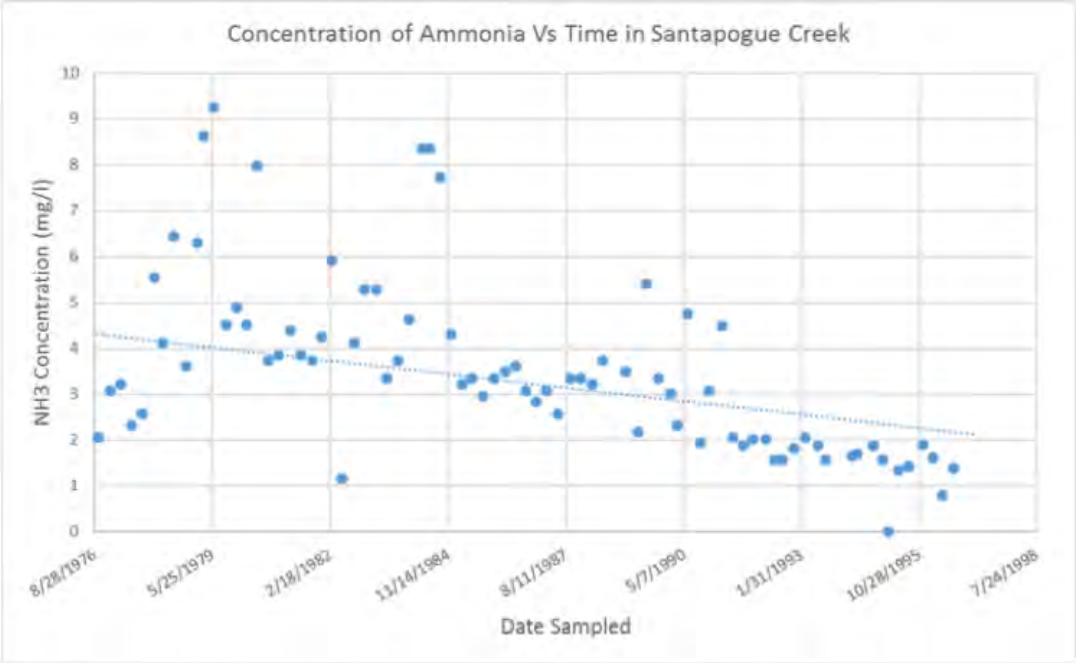


Figure 3-41 Declining Ammonia Concentrations in Santapogue Creek

To check this, we ran our own program on several sampling stations in the Bays. Two of the results (graphs) for Moriches Bay are shown in Figures 110 and 170 (next page), and confirmed what the CWRMP (Figure 5-11) and the SWP (Figure 3-40) had found; downward trends in nitrogen concentrations. In addition, the Graphs for the Great South Bay, shown in Appendix B of the Addendum, also confirmed downward trends. However, by using a ten year reporting period and lumping sampling station data together, the SWP showed an upward trend in nitrogen concentrations. The SWP changed the reported time period and arranged a linear fit; lumping all the "contributing waterbodies" together. As we see from a comparison of the graphs, this does not yield a true picture of water quality and can skew the results to appear good or bad, depending what sampling station data and time period is used. **This misportrayal of nitrogen being on the rise and needing "remediation" appears to be a common theme and pattern throughout the SWP and DGEIS.**

Statement: ***Figures 3-41**, **3-42** and **3-43** illustrate ammonia concentrations in three streams located within the Southwest Sewer District (SWSD) and discharging to Great South Bay, Santapogue Creek, Penataquit Creek and Champlin Creek, respectively. From west to east within the SWSD, the streams all show the beneficial result of sewering as ammonia levels began to decline circa 1980, shortly after the Bergen Point WWTP began to operate. Nitrogen in wastewater that previously discharged to groundwater via OSDS, discharged to streams and was conveyed to the Great South Bay was diverted to the Bergen Point WWTP which ultimately discharges treated effluent off- shore via an ocean outfall. The figures each show significant changes in pre-sewering and post- sewering ammonia concentrations, with the largest and western-most stream showing the most dramatic declines of over 2 mg/L.*

Comment: **Figure 3-41 is shown** on the previous page. With the limited information given, it is impossible to verify to what extent the installation of sewers affected the cited *creeks* (*streams*). It is logical to conclude that the elimination of thousands of septic systems would have an effect on the nitrogen levels in the groundwater and surface waters in the sewered area. The conclusion that "*the streams all show the beneficial result of sewering"* can not be supported by using only the levels of ammonia found in the streams. What about the other parameters that are indicators of wastewater contamination? Also, there are other factors, other than the elimination of septic systems and sewering, that may have contributed to the reduction in ammonia. These include the possibility that there is less fertilizer being used along the shorelines or that there have been some drainage improvements that reduced direct runoff or that illegal direct discharges were corrected or that there is less wildlife residing (defecating) in the *streams* or less decomposition of organic matter occurring in the immediate area. The use of ammonia concentrations in the selected *creeks* is a weak argument for sewering. Anyone familiar with the operation of conventional OSDSs knows that the effluent from the conventional systems is expected to convert to nitrates, shortly after leaving the treatment zone of the leaching area, and the nitrogen would not normally be in the ammonia form as it works its way towards surface waters. However, this nitrate conversion may not occur, if the disposal systems are improperly installed directly into groundwater or allowed to discharge directly (no soil filtration) into surface waters. The effluent would then be primarily in the form of ammonia. If ammonia in the *streams* was caused by faulty septic systems, then the problem could be corrected by repairing the existing systems. This would have been more cost-effective than a sewer system and have less **negative impacts** on the environment. q

Figure 110

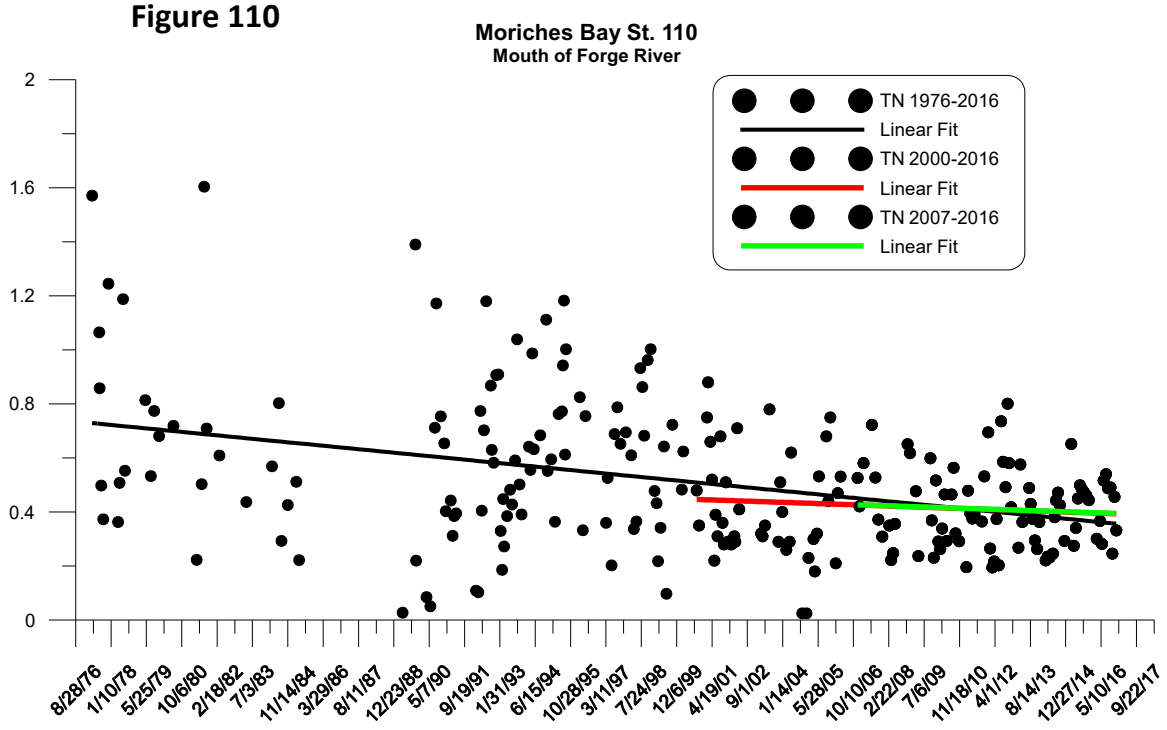
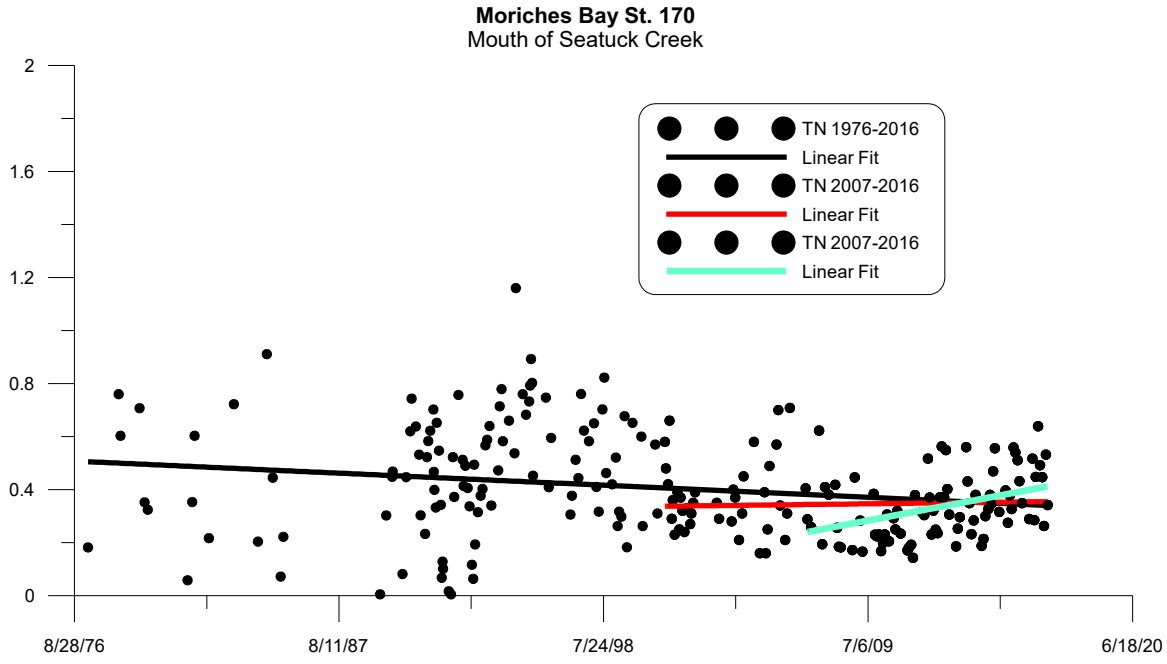


Figure 170



In addition, the three SWP graphs (***Figures 3-41**, **3-42** and **3-43)*** do not show their source and only show data up until 1997; where are the last twenty years of data? It is reported in the SWP (see Figure 1-5i above) that nitrogen levels in the sewered area have risen in the last ten years? Why hasn't this data been shown? In any event, **the SWP has not demonstrated a scientifically sound conclusion that sewers reduced ammonia concentrations in the adjacent *streams*; or if it had done so, that it was actually a beneficial effect.**

This DGEIS/SWP conclusion, as it relates to the benefit of sewering, should be removed from the DGEIS. **Instead, a list of the harmful effects of sewering should be included.** [Policy Report, page 8, *What's wrong with past sewage disposal policies?]*

1.3.3 Natural Environment

Statement: *In fact, implementation of the Proposed Action is projected to result in groundwater and surface water quality improvements that would support improvements to the associated natural environment.* ***Excess nitrogen has been linked****, for example, to water quality issues resulting in increased chlorophyll-a and reduced water clarity, storm-surge protection provided by coastal wetlands and aquatic vegetation, and an overall increase in the number of HABs.*

Comment: This statement is misleading. It implies that nitrogen from conventional sewage disposal systems are having a detrimental effect on the natural environment and that the Proposed Action Plan (basically sewering and using I/A OWTS) will resolve the mentioned "*water quality issues*". Since the focus of the SWP is sewage disposal and the elimination of conventional sewage disposal systems (OSDS), it is important to define the source of the "***excess nitrogen***" in the statement; which was not done. As we have discussed, nitrogen from sewage disposal systems has not been shown to cause *"water quality issues resulting in increased chlorophyll-a and reduced water clarity, storm-surge protection provided by coastal wetlands and aquatic vegetation, and an overall increase in the number of HABs."* The SWP uses the word **"linked"** in the statement. This word is used throughout the DGEIS and the SWP and does not mean caused. Linked is a word that is used to imply a connection, where no direct cause can be proven; unfortunately, anything can be "linked" using a computer model, if the assumptions are changed accordingly. As previously discussed under "Conclusion #9, **the reduction of nitrogen by the Proposed Action will more likely have harmful effects and a negative impact on the clam industry and other ecological endpoints.** r

1.3.5 Noise and Odors

Statement: *The Proposed Action is not anticipated to result in significant adverse noise or odor impacts. s.* [Typo] *Noise complaints have not been raised by residents currently utilizing I/A OWTS, nor have odor complaints been logged. Modified Appendix A systems and STPs would continue to be required to meet the requirements of the local municipal code as well as those standards established by the County*.

Comment: The statement indicates that impacts are not "*anticipated*"; however, it does not state that there will be none. The noise analysis of the I/A OWTSs appears to depend upon the raising of complaints by "residents" in the pilot programs, how about neighbors? Was a noise study done, taking into account the ambient noise levels at night in different neighborhoods? It is also interesting to note that the statement does not say that there are no odor problems, but rather states, "*nor have odor complaints been logged".* Were there odor problems and no one wrote them down? It is common knowledge that I/A OWTSs have odor problems; especially when they are not

functioning properly, creating septic odors. Noise is a potential **negative impact** with no supporting data to show otherwise. s

1.3.5.1 Noise

Statement: *Any major facilities or projects proposed in the future, such as sewer expansion projects, new Appendix A STPs, or individual/specific clustering projects, are subject to project-specific environmental review that would include consideration of potential noise effects. The proposed revisions to Appendix A of the Standards for Approval of Plans and Construction for Sewage Disposal Systems for Other than Single Family Residences require that noise control is included in the design of Appendix A STPs to qualify for reduced setbacks.*

Consequently, the Proposed Action would not result in substantial changes to noise levels at receptors in the County and would not result in significant adverse noise impacts.

Comment: The SWP proposes to allow STPs to be located closer to neighbors, depending on the "*project-specific environmental review*" to "*consider noise effects*". The problem with depending on an "*environmental review*" (known as SEQRA), is that the SCDHS will only do a perfunctory review. The reality is, if the project meets SCDHS standards (which will now include relaxed separations distances to STPs), the SCDHS will probably only require a short environmental assessment form or accept a lead agency determination as fulfillment of their "environmental review" responsibilities. The SCDHS will not reach out to affected neighbors, who may be impacted by noise or ask for a noise study, which should include existing ambient noise levels and the possibility of vibration effects. The assumption is, that if the project meets standards, then there is no impact; this is flawed logic. What noise studies have been done to justify the changes in Appendix A; which allows STPs to be closer to "*receptors*"? What are "receptors"? Are they People? Noise control is best handled by increased distances coupled with suppression. These changes should not be permitted until it is proven that noise will not be an issue. Making the changes on the basis that some future "environmental review" may prove it to be a correct decision, is not sufficient nor good engineering practice. The DGEIS statement should be:

Consequently, the Proposed Action may result in substantial changes to noise levels at receptors in the County and may result in significant adverse noise impacts (negative impact).

1.3.5.2 Odors

Statement: *Wastewater treatment in general has been identified as a potential source of noticeable offsite odors. As part of the Proposed Action, I/A OWTS would replace an OSDS that consists of a septic tank, leaching structures, and does not have active or mechanical means of treatment or supplemental filtering. I/A OWTS would be installed below ground similar to that of a traditional onsite wastewater disposal system. The I/A OWTS would not result in new odor sources.*

The proposed revisions to Appendix A of the Standards for Approval of Plans and Construction for Sewage Disposal Systems for Other than Single Family Residences require odor reduction be implemented into the design of Appendix A STPs to qualify for reduced setbacks. Site specific projects would be the subject of local review and approval. STPs, new sewer districts, or sewer district expansions would also be the subject of their own environmental review (ex. SEQRA) where the potential for odors would be evaluated. Therefore, the Proposed Action is not anticipated to result in odors noticeable offsite and would not have the potential to cause significant adverse odor impacts.

Comment: The first paragraph of this statement is basically a comparison of conventional onsite sewage disposal systems (OSDS) to Innovative and Advanced Onsite Wastewater Treatment Systems (I/A OWTS), in respect to the potential for impacts from odors. Any odors would be the result of gases produced primarily from the "digestion process" associated with sewage treatment. In the case of conventional sewage disposal systems, odors are only detected when the system "fails" or is improperly installed. The conventional system is designed to have no direct discharge into the atmosphere. The system operates primarily in an anaerobic environment until the treated wastewater enters the biologically active zone at the wastewater to soil interface, this area is semi-saturated and supports both anaerobic and aerobic treatment. Any noticeable odors from gases that are produced in the conventional system's treatment process are retained below ground. In a properly working and maintained conventional system, any gases that work their way to the surface through the overlaying soil are not noticeable.

On the other hand, the I/A OWTSs depend on active aeration in the treatment process. This process produces gases that are more directly vented into the atmosphere. In its conclusion, SWP states that "*The I/A OWTS would not result in new odor sources.*" This statement is misleading. Although the wastewater is not a "new odor source", the I/A OWTS treatment of the wastewater produces gases, which are vented to and discharged into the atmosphere; this is substantially different than what the conventional system does. The potential for odors is much greater and has been a problem, especially if the system is not working properly. Now picture 380,000 I/A OWTS systems all aerating their wastewater and discharging the gases into the neighboring atmosphere. Common sense alone tells us there will be a significant impact; and this is why conventional septic systems are not permitted to directly discharge their gases into the atmosphere. The SWP conclusion that "*The I/A OWTS would not result in new odor sources.*" is incorrect and should state: t

The I/A OWTS will result in new odor sources (potential negative impact).

1.3.6 Human Health (Contaminant Exposure/Hazardous Materials)

Statement: *The installation and use of I/A OWTS units does not require the use or storage of chemicals or other hazardous materials. The flow discharged from the units is not considered hazardous and proper operation of the systems would not result in a potential negative impact on human health.*

Comment: This statement, besides applying to I/A OWTS, also can also be applied to conventional sewage disposal systems. *The flow discharged from* conventional systems *is not considered hazardous and proper operation of the systems would not result in a potential negative impact on human health.* The omission of conventional systems as a strategy option highlights the fact that the DGEIS and the SWP have disregarded a fair and balanced review of the conventional sewage disposal system, going out of its way to paint a negative picture of the most cost-effective and practical method for disposing of sewage in Suffolk County. The conclusion should be:

The flows discharged from OSDS and I/A OWTS are not considered hazardous and proper operation of the systems would not result in a potential negative impact on human health. u

Statement: *Instead, upgrading of failed systems and old/grandfathered systems is expected to result in increased separation of the system to the groundwater table and reduced failures which in turn results in less human health hazards associated with exposures to sewage and potential physical harm from a collapsed system. Chemicals and/or hazardous materials that were previously known to be disposed of in OSDS would need to be assessed and remediated in accordance with SCDHS's 'action*

levels' stated in the SCDHS Standard Operating Procedure for the Administration of Article 12 of the Suffolk County Sanitary Code (Article 12 - SOP #9-95).

Comment: This statement ignores the benefits of "upgrading" conventional systems to conventional standards. The benefits mentioned here for I/A OWTS are the same for conventional systems (*increased separation of the system to the groundwater table and reduced failures which in turn results in less human health hazards associated with exposures to sewage and potential physical harm from a collapsed system*). Once again, the SWP ignores the conventional system option. The following conclusion should be added to the SWP and DGEIS:

Upgrading of failed systems and old/grandfathered systems with new conventional systems built to conventional standards will result in increased separation of the system to the groundwater table and reduced failures which in turn results in less human health hazards associated with exposures to sewage and potential physical harm from a collapsed system. v

Statement: *Reduction in total nitrogen loading to surface waters and groundwaters (improvement in water quality) would have a positive impact on water quality that can result in an improvement in human health.*

Comment: This statement implies that there is something wrong with the health of the residents in Suffolk County that installing sewers or I/A OWTSs will resolve. The SWP does not describe any diseases or abnormalities that reducing nitrogen will cure ("improve human health"?). This is an illogical and unfounded statement and should be removed from the SWP. This is an example of the SWP making false claims to bolster its preconceived goals of sewering and increasing population densities. No one is ill from nitrogen poisoning and in fact the nitrogen levels in groundwater are acceptable. This SWP conclusion should be removed from DGEIS and a more appropriate statement, if necessary would be:

Reduction in total nitrogen loading to surface waters and groundwaters (improvement in water quality) has not been shown to have an impact on water quality that will result in an improvement in human health. w

Statement: *For example, reduced nitrogen concentrations should result in a reduction in the number and intensity of HAB events on a Countywide basis, which would result in reduced HABs related toxins within shellfish and therefore increased protection of human health*.

Comment: As already discussed, decreasing nitrogen loading from sewage disposal systems has not been proven to prevent HABS. Although the SWP states that "…*reduced nitrogen concentrations* ***should*** *result in a reduction in the number and intensity of HAB events on a Countywide basis…",* it has provided no hard evidence that it will. Instead it has speculated with the use of computer models that are based upon unfounded assumptions. Also as discussed the reductions in nitrogen loading to the estuaries, such as the Great South Bay have not had a beneficial effect and may be the cause of the reductions in clam populations and the increase in harmful algae blooms. [See discussion in this report under "Conclusion #9]

The following statement should be added to the SWP:

It has not been proven that reduced nitrogen concentrations will result in a reduction in the number and intensity of HAB events on a Countywide basis; nor would it result in reduced HAB's related toxins within shellfish or increased protection of human health. x

1.3.9.1 Water Export/Impact to Water Supply

Statement: *Diversion of sanitary wastewater effluent from existing OSDS within the presumptive sewer project areas to off-shore surface waters was determined to result in an insignificant reduction in groundwater recharge and would have no impact on the ability to provide the approximately 245 MGD of potable supply used Countywide on a daily basis.*

Comment: This is an example of how Suffolk County has not learned from the past. **The discharge of our water supply into the coastal waters is a strategy doomed for failure.** Can we really afford to continue expanding the existing sewer district discharges to the coastal waters? If history tells us anything, the answer is no. Of the eight presumptive sewer projects listed in the SWP (section 4.5.2), it appears that only two will be recharging the treated water back into the aquifer; the others will be discharging to coastal waters. This is the same trap that Queens and Nassau County fell into. Queens ran out of water thanks to their discharge through their sewers and treatment plants and Nassau is now facing a water crisis and will be looking for water from Suffolk. This is explained in our May 18, 2018 review of the 2017 LICAP report. [See LICAP Report Review]. Besides running out of water, Nassau County is experiencing the impacts of lowered water tables on the environment, including a reduction in stream flow, loss of surface water features and ecosystems that depend on them, reduction in coastal discharge, change in bay salinity, shifts in contaminant migration paths, a shift in the saltwater interface and the potential for saltwater intrusion, change in recharge zone boundaries and the rate of groundwater flow. [See LICAP Report Review, pgs. 3-6]. The question here is not whether we have the *"ability to provide the approximately 245 MGD of potable supply used Countywide on a daily basis",* but whether it is wise to continue expanding the water usage while increasing the amount we waste by discharging into the coastal waters. The SWP promotes connecting more areas to the SWSD and discharging the water into the Atlantic Ocean as stated in the SWP:

. *"…. the adjacent SWSD provides a significant benefit towards achieving load reduction goals since the outfall for the SWSD discharges to the Atlantic Ocean._In essence, 100 percent of the wastewater nitrogen emanating from parcels connected to the SWSD is removed from the Great South Bay subwatershed."* [ES-64}

This also means 100% of the treated water is discharged and not recharged to the aquifer. There are certain conditions that might require the hook up to an existing coastal outfall district, but being next to it is not one of them. [See Policy Report page 3]

In addition to the loss of water, the extension of such districts increases the population densities causing an impact on services and infrastructure. Although the SWP assures us that the the sewers will not have such an effect, reality tells us different; one only has to look at western Long Island to see the impact of unbridled development spurred on by sewers. The DGEIS turns a blind eye to this phenomenon and should declare it as a **negative impact**, as it affects what is left of the rural way of life in Suffolk County.

y

The DGEIS should require the SWP to address this and recommend a policy that prevents additional expansion of wastewater input, both from within and outside the coastal outfall sewer districts.

Statement: *It is important to note that SCDHS Guidance Memorandum #28 (July 24, 2017) provides the requirements necessary for siting proposed or expanded STPs to determine potential impact to drinking water supplies. Changes/modification to these guidance requirements are not proposed.*

Individual sewering projects would as part of the environmental review process evaluate the potential negative effect to local surface water baseflow.

Comments: This statement implies that the SCDHS will take action to stop expansion of STPs which are determined to have a negative impact to drinking water supplies. However, this *Guidance Memorandum #28* does nothing to prevent the continued expansion of the sewer districts that have coastal outfalls that discharge millions of gallons of treated water into coastal waters. How many times has SCDHS taken action to prevent expansion of sewer districts that discharge into the coastal waters? How many times has SCDHS prevented the expansion of STPs that discharge into coastal waters? If any, what are examples of the cases in which SCDHSs prevented such expansions of discharge? The SWP falls short by not establishing a policy that prevents further **increases in discharge and reductions in recharge** or requiring SCDHS to take action in this respect. It does nothing to prevent expansions of uses (increase in wastewater flows within the districts), which result in increased discharges by default. As a result, enactment of "*The Proposed Action"* sets the stage for further impacts on the groundwater supply and reduction in base flow. Impacts have already been documented in the Southwest Sewer District area, which is now approved for a 40 MGD discharge.

The SWP should recognize that the use of such Memorandums constitute a non-binding and ineffective approach to managing the STPs and their potential increases of discharges to coastal waters. The DGEIS should have concluded that the Proposed Action and the proposed expansion of such sewer districts will have a negative impact on the groundwater. z

Presumptive Sewering Projects, Sewering and Clustered/Decentralized Recommendations

Statement: *The identification of STPs and clustered/decentralized systems as an effective tool in addressing nitrogen from sanitary wastewater would support growth approved by a local municipality but would not be growth inducing on its own.*

Comment: This statement does not make sense as written. How does identifying STP's support growth? Did the SWP mean constructing or connecting to them would have an impact? In any event, for the SWP to ignore the negative impacts that such infrastructure projects have on a community's way of life is disingenuous and not in touch with reality; one only has to look at the Town of Babylon and how its zoning broke down and sprawl took over after the SWSD was built. By deferring protection of our water supply to individual zoning boards, the SWP is signing the death warrant for our water supply. As previously discussed, the real goal of the SWP is to promote economic development, and the real tool to do this is nitrogen. The nitrogen "problem" has been exaggerated to scare the public into voting and paying for sewers. [Policy Report, pages 8-10]

The DGEIS should have declared sewering to coastal outfalls result in a negative impact. aa

The DGEIS should have determined that leaving the fate of our water supply in the hands of zoning boards would result in a negative impact.

1.3.10 Unavoidable Adverse Impacts

Statement: *The Proposed Action does not include the development nor require the development of a physical project.*

Comment: The purpose of this statement in this section of the DGEIS (Unavoidable Adverse

Impacts) is not clear. It implies that *The Proposed Action* does not involve any construction *(development) of a physical project* and therefore is released from scrutiny for *adverse impacts*. *The Proposed Action* involves the development of a plan, which will eventually result in construction of over 380,000 sewage disposal systems, including STPs, sewers and onsite wastewater treatment systems. Obviously, ***The Proposed Action* is not exempt from scrutiny under SEQRA. This statement is misleading and should be removed**. ab

Statement: *The changes to the Sanitary Code and Appendix A requirements are proposed to address water quality impacts associated with nitrogen loading from existing onsite wastewater disposal systems (OSDS).*

Comment: This statement avoids the fact that the primary purpose of *The Proposed Action* (which is downplayed in the SWP) is to foster economic development, including creating jobs and opening land for more intense development. This goal has been widely touted in many public meetings and forums, but interestingly, not in the SWP. Is it because the County does not want the SWP to be related to increasing population densities and urban sprawl, which would not be popular with the general public? ac

The DGEIS should focus on the issue of economic development and urban sprawl and include a full analysis of its positive and negative impacts.

1.3.11 Irreversible and Irretrievable Commitment of Resources

Statement: *Under the Proposed Action, natural and man-made resources would be expended. For example, resources would be needed in the manufacturing and installation of the approved I/A OWTS. The commitment of the resources required (such as metal and plastic) to construct the I/A OWTS unit would result in those resources not being available for other uses.*

Resources such as land, construction materials, and human effort to design, install, monitor and maintain the STP would be required. The analysis of the specific commitment of resources associated with individual STP or clustered/decentralized projects would likely be addressed in a project specific environmental review (i.e. project specific SEQRA review). One would expect that resources such as land for a project site, equipment, labor, and energy would be required for individual STP or cluster/ decentralized projects. Operation of a STP would also include a commitment of energy. **These project commitment of resources would be the same with or without the implementation of the Proposed Action.**

Comment: This statement concludes that the "*commitment of resources would be the same with or without the implementation of the Proposed Action.*" This is incorrect because the SWP and DGEIS do not consider the option of using conventional onsite sewage disposal systems in the plan or analysis. As previously discussed, considering the benefits of using conventional systems, there would be less resources necessary to treat wastewater. The statement that *resources would be the same with or without the implementation of the Proposed Action* should be corrected. The conclusion should be:

These project commitments of resources will be higher with the implementation of the Proposed Action and resultantly have a potential negative impact. ad

The DGEIS and SWP should include the option of using conventional sewage disposal systems in its analysis and as part of the Proposed Action to mitigate impacts.

1.3.12 Mitigative Measures

Statement: *The implementation of a Countywide wastewater management plan would result in the reduction in nitrogen loading from wastewater sources so as to protect and restore both groundwater and surface water quality and the coastal ecosystems of Suffolk County. Water quality improvement is a beneficial outcome of the Proposed Action and does not require mitigative measure*.

Comment: As already discussed, the SWP will not achieve its goal, *"to protect and restore both groundwater and surface water quality and the coastal ecosystems of Suffolk County",* by focusing on nitrogen reductions. Neither the DGEIS nor SWP have identified what aspects of groundwater, surface water or coastal systems will be "restored" by nitrogen reduction; and ignore the fact that starving the surface waters of nitrogen will likely have a **negative impact**. Restoration for surface water **may require raising the nitrogen loading** to some previous level where clams, in particular, thrived (clams need nutrients). Rather the goal appears to be nitrogen reduction in and of itself, with no discernible ecological endpoints. With the implementation of the SWP, mitigative measures are necessary due to the economic impact the SWP will have on the residents and the commitment to the use of unnecessary resources. Such commitment to resources is not warranted, considering the lack of cause and effect due to nitrogen. As previously discussed, the water quality (as far as nitrogen is concerned) is acceptable, and the "nitrogen problem" has been exaggerated to achieve other financial goals, such as grants and federal funds. **To the contrary, the Proposed Action will not end up as an improvement, but rather as having a negative impact**. ae

Statement: *Several wastewater management technologies were evaluated to address nitrogen loading from OSDS. While the recommendations within the SC SWP focus on the use of I/A OWTS as the primary wastewater management strategy, initial recommendations for other management methods, including sewer expansion, and clustering/decentralized systems are also provided (but would require follow up study and project-specific feasibility analysis before final recommendations can be provided).*

Comment: This statement points out the fact that the SWP did not address conventional onsite sewage disposal systems as part of the plan. Looking at the SWP, no in depth analysis of conventional systems was done. No studies of how the systems work or how they can be improved were presented. In fact, as part of the wastewater planning, in-depth studies were proposed, but never carried out. Instead the County moved ahead with the SWP, not knowing the true nitrogen loading and treatment processes (including denitrification) that the conventional systems were capable of. As a result, the nitrogen loading models are flawed and the conclusions incorrect. Without conventional systems being part of the wastewater strategy **negative impacts** will occur.

1.4 Alternatives Analysis

Statement: *Five alternatives to the Proposed Action were identified during project Scoping and evaluated in this Draft GEIS.*

Comment: The problem with the five alternatives presented is that none of them include the use of conventional systems as part of the strategy. As already discussed, the conventional systems have benefits over other methods of sewage disposal that have not been addressed in the SWP or the DGEIS; without conventional systems being part of the wastewater strategy **negative impacts** will occur. The Comprehensive Groundwater Plan also indicated that the conventional systems were effectively protecting the groundwater under Article 6. [See Policy Report, pages 4 – 6 & 10]

2.2.5.3.1 Preliminary Identification of Subwatersheds with Potential Sanitary Impacts (SWP)

Statement: *This preliminary evaluation provides an initial identification of pathogen-impacted waters that could potentially be caused by on-site disposal of sanitary wastewater based on the presence of residential land use within the area where the depth to groundwater is less than 10 feet.*

Comment: This entire section is speculative and provides no evidence that conventional sewage disposal systems are the source of any pathogens found in surface waters. Pathogens were found in both areas that are serviced by sewered and by conventional systems; and there is no cause and effect. Anyone familiar with the functioning of conventional systems realize that the pathogens excreted from warm blooded animals (such as humans) do not survive long in the harsh conditions outside the human body (This is confirmed in section 2.2.5.4.1 of the SWP). The SWP has sampled water bodies and found pathogens that they have been able to relate to human origins. However, this does not confirm that conventional sewage disposal systems are the source of the pathogens. To prove this, the SWP would have had to study existing sewage disposal systems and track the effluent plumes for pathogens here on Long Island. The SWP did no such study. If it had, it would have found that the pathogens were destroyed before they reached groundwater or surface waters. This is evidenced by the lack of pathogens showing up in our groundwater supply, which has been replenished by the effluent of septic systems (including outhouses), since the colonists first occupied Long Island. The only time we see pathogens is when the water supply wells or distribution systems are compromised by direct outside influences (such as bird populations in water storage tanks or improper sanitary seals that allow runoff to enter well casings). Rather than speculate on something that is most probably not true, **the SWP should conclude that it is highly unlikely that properly functioning sewage disposal systems are causing pathogens in surface waters (or groundwater supplies).** af

Furthermore, this statement, along with others in the SWP, make the assumption that conventional sewage disposal systems, located in areas with less than 10 feet to groundwater, provide less wastewater treatment than other areas. The SWP provides no evidence of this, other than it expects the detention time of the effluent plume to be less in these areas. In fact, because of the presence of black peat in most of these coastal areas (as discussed under Conclusion #2) the detention time is expected to be greater [See Liu and Young Report]. Regardless of the detention time, these areas actually provide the best opportunity for natural denitrification to occur. In addition, the SWP has provided no evidence that pathogens have any better survival rate in these areas. Since this was one of the primary assumptions used in determining the "priority" areas for advanced wastewater treatment; the priority areas no longer become priority, if nitrogen is reduced and pathogens are not present in the groundwater base flow. **Unnecessarily designating areas with less than 10 feet to groundwater as priority areas creates a negative impact on homeowners in those areas.**

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Addendum to
A Review of the Draft Generic Environmental Impact Statement for the Suffolk County Subwatersheds Wastewater Plan
Suffolk County Wastewater Management Program for the Reduction of Nitrogen Loading from Wastewater Sources
Phase 1 -Comments
September 4, 2019

Prepared: September 13, 2019
Addendum

"Branding nitrogen as the cause of harmful algae blooms is like stating oxygen is the cause of forest fires."

The SWP fails to differentiate between beneficial and harmful algae blooms and the trophic states that likely cause them.

Is spending 4 billion dollars to reduce nitrogen really going to solve the problems or create new ones?

SWP Review Group:
Peter Akras PE, MSPH
Jack Mattice PHD
Robert Nuzzi PHD
Royal Reynolds PE
John T. Tanacredi PHD
Roger C. Tollefsen B.Ch.E.
Martin Trent

Electronic Copy available at: http://tiny.cc/SWPaddendum
Original Report at: http://tiny.cc/SWPreview
Contact Persons:
Concerning Wastewater Management (sewage disposal)
Royal Reynolds
rrvreynolds@optonline.net
631 885-1926
Concerning Impact on estuaries (HABs, Shellfish, etc.)
Roger Tollefsen
nyseafood@msn.com
631 740-0381

ADDENDUM to Phase 1 - Comments dated September 4, 2019

This document is a continuation of the September 4, 2019 report, which had been prepared with the purpose of reviewing the Subwatershed Wastewater Plan (SWP) and Draft Generic Environmental Impact Statement (DGEIS). Following the Council on Environmental Quality (CEQ) hearings held on September 5 and 6, 2019; we have additional comments, based on both the hearing and the DGEIS.

The CEQ Hearings

At the hearings testimony was given by **those supporting the SWP** (the Plan); with very little if any constructive criticism. A common theme was that the SWP was "based on good science" and it must be approved (with no substantive changes). On the other hand, **residents and real estate representatives** were concerned by their perceived inability to market homes that would be required to spend anywhere from $20,000 to $40,000, before they could sell homes; or if their existing septic systems failed. **The construction industry** welcomed the sewering aspect of the SWP, which they perceived as creating more work (profits) for them and allowing them to build more intense developments, such as high density condominiums or apartments. **Our testimony and comments** focused on the flaws of the DGEIS and the SWP and the negative impacts that would occur, if the SWP (Proposed Action) was put into motion. We also described actions that needed to be taken to prevent negative results and maintain a sustainable water resource.

Attached as Appendix A are the comments made by members of our group at the public hearings, which we attended both nights (some variation may have occurred during presentations).

Additional comments and questions pertaining to the DGEIS and SWP

Nitrogen loading assumptions are still in question

In respect to the assumptions in the SWP and DGEIS, concerning nitrogen loading from Onsite Sewage Disposal Systems (OSDS), it does not appear that the Plan provide sufficient reports, studies or data to provide a baseline to determine nitrogen loading reductions to ground and surface waters. In the course of this review, we will be requesting access to certain references or studies; it would be helpful and save time if the County would supply links to those documents, similar to what we did in our comments. Based upon the DGEIS and SWP the following questions and comments are raised:

Did Suffolk County conduct or was it involved with any studies that investigated the sewage plumes from existing cesspools or OSDSs on the south shore of Long Island or the barrier beaches? Especially, in respect to naturally occurring denitrification and reductions of other constituents of wastewater. **Did the County take or have samples taken of the treated effluent from the unsaturated zones below the leaching rings or fields? If so, what results were obtained?** Please supply specific references (studies and reports) and pertinent pages. a

<u>Statement (ES-7):</u> *… a properly designed OSDS provides partial removal of BOD and solids, it provides minimal nitrogen removal.*

<u>Comment</u>: What is the basis for this statement? **Has Suffolk County conducted or participated in any investigations (studies or reports) that investigated the sewage plumes from existing conventional sewage disposal systems (OSDSs) that supports this statement?** If so, does the SWP supply any empirical data to support the degree of removal of BOD, COD or other constituents of sewage mentioned? b

As part of the SWP has Suffolk County conducted or participated in any investigations (studies or reports) that investigated the sewage plumes from existing conventional sewage disposal systems (OSDSs), which used leaching rings as the means to discharge wastewater, anywhere in Suffolk County? Especially, in respect to naturally occurring denitrification and reductions of other constituents of wastewater. **Did the County take or have taken samples of the treated effluent from the unsaturated zones below the leaching rings? If so, what results were obtained?** Please supply specific references (studies and reports) and pertinent pages. c

As part of the SWP has Suffolk County used any information from studies or reports conducted by Stony Brook University that tracks wastewater plumes from OSDSs here in Suffolk County? Especially, in respect to naturally occurring denitrification and reductions of other constituents of wastewater. **If so, what results were obtained?** Please supply specific references (studies and reports) and pertinent pages. d

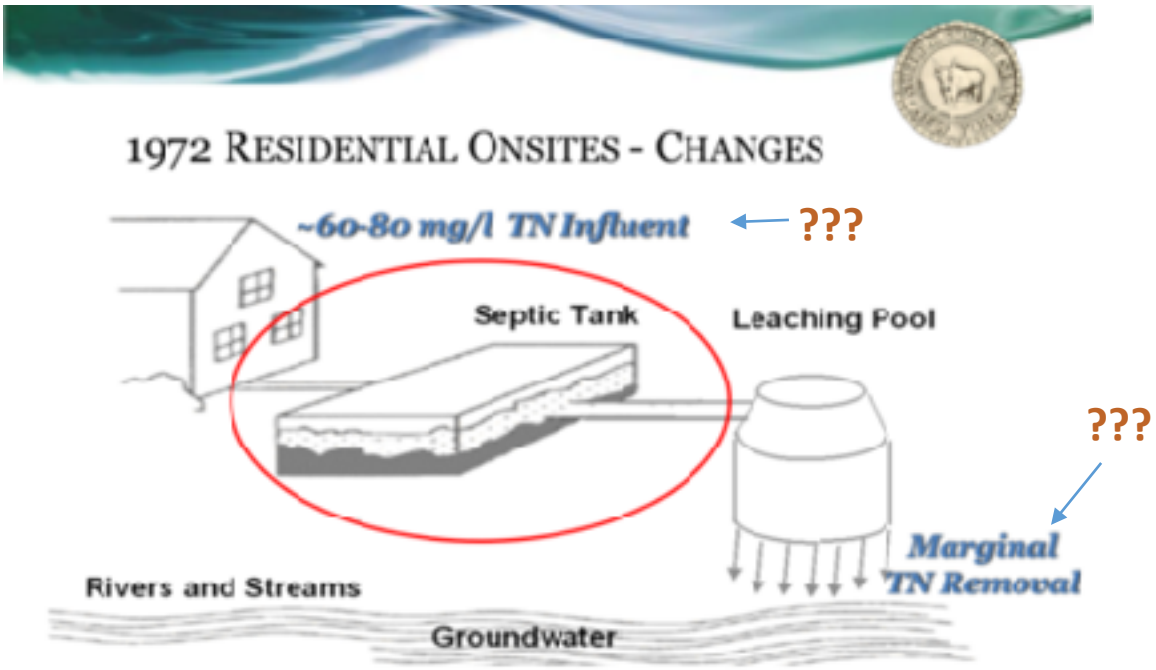
What investigations (reports or studies) did the SWP depend on to support decreasing the nitrogen loading reductions from 66% to 27% (between 2016 and 2019)? Please indicate determinations zone by zone (e.g., septic tank, wastewater interface, unsaturated soil, riparian zone, etc.) If investigations were conducted, please supply specific references (reports and studies) and pertinent pages. e

As part of the SWP has Suffolk County conducted or participated in any investigations (studies or reports) to support decreasing the nitrogen loading reductions from 66% to 27% (between 2016 and 2019)? If investigations were conducted, please supply specific references (reports and studies) and pertinent pages.

Depiction of Conventional Sewage Disposal Systems is misleading

The following Figure, "1972 Residential Onsites-Changes", which has been presented at the September 5th and 6th hearings by SCDHS and circulated with the DGEIS, indicates "Marginal TN Removal". **What is meant by the term "Marginal TN Removal"; quantitatively? What percent of total nitrogen removal does this term represent? What studies have been done in Suffolk County to show the levels of denitrification described? If investigations were conducted, what results were obtained?** Please supply specific references (studies and reports) and pertinent pages. f

Furthermore, the diagram indicates the TN influent is between 60 and 80mg/l. **Isn't the average wastewater effluent in Suffolk accepted as 60mg/l? If the average is 60 mg/l how can the range be 60 to 80mg/l? Isn't this number inflated? If so, why?** g



As part of the SWP has Suffolk County done or participated in any investigations (studies or reports) in Suffolk County to determine naturally occurring denitrification along the shorelines of the southern bays and estuaries? Has the SWP checked for the existence of black peat (bog) in the riparian and shoreline areas that would be conducive to naturally occurring denitrification? Has the SWP checked these areas for conditions that would promote natural denitrification such as low Dissolved Oxygen and Dissolved Organic Carbon? If so, what results were obtained? Please supply specific references (studies and reports) and pertinent pages. h

Has the SWP done any investigations (studies or reports) in Suffolk County to confirm <u>naturally occurring denitrification in the hyporheic zone</u> along the south shore of Long Island, estuaries or the barrier beaches? If so, what results were obtained? Please supply specific references (studies and reports) and pertinent pages. i

Until all the questions raised are satisfactorily answered, the SWP should be considered incomplete and should not be approved.

The SWP fails to differentiate between beneficial and harmful algae blooms and the trophic states that likely cause them.

The relative amount of nutrient loading in a water body is referred to as a trophic state. Before the proposed SWP marine Nitrogen reduction efforts begin (Proposed Action), it is necessary to determine the trophic state of the water bodies involved. Some bodies of water are considered to be Eutrophic and others Oligotrophic. **Eutrophic** means having the

highest amount of biological activity or a body of water with high nutrient levels. **Oligotrophic** means having the least amount of biological productivity or a body of water with low nutrient levels. Before moving forward, the SWP must clearly identify the trophic state of each water body and tailor the actions accordingly. j

The SWP fails to differentiate between beneficial and harmful algae blooms, which can lead to confusion in determining water body needs. In describing blooms, the SWP should refer to either a "bloom of beneficial algae" (BBA) or a "bloom of harmful algae" (BHA). Categorizing all "Blooms" as harmful algae blooms (HABS) is misleading. A distinction must be made between the algae that form the base of a productive estuary (**beneficial algae**) and those algae that are toxic or cause harm just by their presence (**harmful algae**). k While a **bloom of beneficial algae** can be caused by excessive nutrients or eutrophication, a bloom of harmful algae is associated with low levels of nutrients or oligotrophication. Labeling both types of blooms as Harmful Algal Bloom or HABs fails to differentiate between the good blooms and bad blooms and can be misleading. The practice of using the term HAB causes confusion and is misleading.

The success story of the Long Island Sound's (LIS) nitrogen reduction efforts is an important example of a BBA (bloom of beneficial algae). The Long Island Sound had low dissolved oxygen caused by the decay of excessive algae; this was due to a massive excess of nutrients. Every environmental group understands this concept and touts this as an example for what is going on in Suffolk County. However harmful algae did NOT dominate the "classic" bloom in the LIS. This is consistent with findings that BHAs (blooms of harmful algae) are only associated with marine water bodies <u>that have low nitrogen loadings not high.</u>

The SWP should discontinue the use of the term HAB and use the more appropriate terms "Bloom of Beneficial Algae" (BBA) or a "Bloom of Harmful Algae" (BHA) to determine water body needs and actions.

Higher nutrient levels can be beneficial to shellfish

As previously discussed, **shellfish need sufficient nutrients to survive**. The vast majority of Peconic Bay is made up of the Great and Little Peconic Bays. Collectively, these waters have been referred to as the "*oligotrophic end of the estuary*". (Gobler C.J. et al 2009). As such, these areas of the Peconic Bay have low Nitrogen loadings, which may favor small phytoplankton cells (such as harmful algae). The report found that "*High levels of inorganic nutrients favor larger phytoplankton cells, such as diatoms and prymnesiophytes, which are generally considered a good source of nutrition for bivalves*". "*Reviews have raised the possibility of beneficial nutrient loading under some conditions for some species (Nixon & Buckley 2002, Carmichael et al. 2004)".* (Gobler, C.J., Bradley B.J. & Wall C.C. 2009)

Suffolk County Bays have lost 90% of their shellfish. These shellfish could play an important part in the filtration of our waters; and shellfish clearly require nitrogen to grow. l But the Subwatershed Wastewater Plan (SWP) specifically does not consider shellfish in their Nitrogen loading calculations. The SWP states that not enough data was available to

consider shellfish in the load reduction rankings and ignores the significant impact that shellfish clearly have on our bays. This will likely result in a **negative impact** on the shellfish industry.

Why hasn't the SWP considered the possibility that nutrient loading may be beneficial to shellfish and that shellfish play a valuable role in algal control?

Do the Nitrogen reduction goals consider the nutritional needs of shellfish and finfish? If so, how was the Nitrogen loading goal calculated? m

The SWP Strategy is to starve harmful algae, but what about the rest of the ecosystem?

Our bays are complex ecosystems and the interactions of many variables must be considered. The Subwatershed Wastewater Plan's (SWP's) nitrogen reduction strategy is to simply starve the harmful algae. The SWP has made the gross assumption that doing so will only produce a positive result and will not negatively affect the rest of the ecosystem. Principles of Ecosystem-based management warn against targeting a single variable; the SWP ignores the caution.

How has the SWP determined that it is possible to starve harmful algae of nitrogen without negatively affecting the rest of the ecosystem? n

The SWP implies that groundwater nitrogen is the cause of fish kills.

Over the past several decades, there have been only a few documented fish kills and they have all involved Menhaden or bunker. In one case, a massive school of over one million bunker was trapped when the Locks at the Shinnecock Canal were closed. In another, a school of marauding bluefish cornered the bunker in the Peconic River. This fish kill was investigated by the Suffolk County Department of Health Services (SCDHS), which concluded: *"The primary cause of the fish kills in the Peconic River was asphyxiation, as a large school of menhaden, trapped in the river by predator bluefish, consumed what was left of an already diminished oxygen supply."* This coupled with a July 30, 2015 letter from John Tanacredi helps explain the fish kill phenomena that occurs in the estuaries. [See Fish Kill Report & Tanacredi Letter]

Furthermore, on September 5thy, 2019, Newsday reported schools of juvenile bunker became cornered in the end of a canal and suffocated. The SWP associates these fish kills with excess nitrogen from ground water contributing to low levels of dissolved oxygen due to algal die-off. However, there were simply too many fish in a closed area.

It is improbable that nitrogen is the cause of these types of fish kills and this should be emphasized in the SWP. o

Shellfish areas <u>are not</u> routinely closed due to septic systems. p

The NYS Department of Conservation (DEC) is responsible to determine what water bodies can be opened to the harvest of shellfish. The DEC routinely preemptively closes some areas due to their proximity to marinas, large boating events and after major rain events. The DEC has also stated that birds have a major impact on the pathogens we find in our waters.

Despite this, the SWP states that pathogens from septic systems may find their way into our surface waters. However as also mentioned in the SWP, human related pathogens found in surface waters are more likely due to boat discharges or sewage treatment plant outfalls. As previously discussed in this review, the effects from septic system pathogens are highly improbable and this should be emphasized in the SWP.

Some water quality issues can be handled locally

Every Suffolk citizen has an interest in drinking water and the health of our bays; but the nutrient concerns in fresh water lakes and ponds are predominately local problems caused by residents situated immediately around the these water bodies. Much media attention has been given to the dog that died seven years ago because it drank water from Georgica Pond; but this pond is inaccessible to the general Public and septic upgrades to the rest of Suffolk County will not affect this local problem. Georgica Pond is exclusively surrounded by some of the most expensive real estate in the country. Residents around this Pond can reduce nutrients by reducing fertilizers, creating natural buffers and upgrading their own septic systems using existing technology. Why are Suffolk citizens being asked to pay for this local issue? q

Why aren't the nutrient load issues associated with fresh water lakes and ponds resolved with local remediation using existing technologies and the use of reduced fertilizers? r

Oligotrophic conditions may favor harmful algae

The Brown Tide has been shown to have a competitive advantage over other algae when nitrogen levels are low. Only those estuaries that have low nitrogen loadings have had Blooms of Harmful Algae (note BHA).

Has the SWP researched the association of low Nitrogen loadings to Blooms of Harmful Algae (BHA) and considered the possibility that Nitrogen reduction to estuaries that already have low nNitrogen loadings may likely result in more BHA? s

4.0 Predicted Benefits of SWP Implementation

Statement: *The direct and indirect impacts of excess nitrogen loading to our groundwater and surface waters have taken a toll on our water quality, economy and resiliency to storms.*

Comment: The key words in this statement is "excess nitrogen loading". Since the existence of excess nitrogen loading has not been scientifically established in the SWP; to say that it is the cause of all these these harmful effects is unsubstantiated. We established (pages 6-9 of initial comments) that the nitrogen loading calculations and impacts are in question, as is the purported state of excess nitrogen here in Suffolk County. If the SWP is referring to harmful algae blooms as impacts, then nitrogen (DIN) levels here in Suffolk County have not been proven to be the cause. If the SWP is referring to wetlands loss as an impact, then nitrogen (DIN) levels here in Suffolk County have not been proven to be the cause of such losses. If nitrogen is not causing harmful algae blooms, then **where is the economic loss due to excess nitrogen?** t

What are the examples of the "toll" on water quality? (Remember, the 93% increase in Magothy nitrogen is only a .85mg/l increase over 26 years.) **What are examples of the "toll" on the economy?** (Remember, the clam population did not decline because of excess nitrogen; rather likely, due to a lack thereof.) **What are the examples here in Suffolk County of the "toll" on resiliency?** (Remember, the Southwest Sewer District has been sewered over 35 years and reducing nitrogen did not prevent damage to that area during Hurricane Sandy.) **What is the basis for this statement, here in Suffolk County?** u

Requiring sewers and advanced treatment systems on Fire Island- Questionable

As a priority 1 area, the SWP will require STPs and advanced wastewater treatment systems to be installed on Fire Island; however, work done by Stony Brook University indicates that naturally occurring denitrification may negate the need for treatment beyond that of a conventional sewage disposal system (OSDS). As discussed in our comments and reports (Eastern Bays Report Review] and Policy Report) there is evidence that naturally occurring denitrification of septic system effluent occurs in the riparian zones in the Great South Bay and other estuaries. The Young and Liu study [Young Report] highlight this phenomenon, showing practically complete denitrification prior to the effluent plume reaching surface waters.

Did the SWP take this study into account in its decision making process? If so, where is this indicated in the report? v

If not, why has the SWP not taken the Young and Liu Study into account in the decision making process, which includes nitrogen removal on Fire Island?

1.1.6.4.4 Revision to Leaching Alternatives

Statement: *While leaching pools are an efficient means of recharging effluent wastewater into the aquifer, they provide little, if any, treatment benefit for nitrogen removal and other contaminants such as CECs.*

Comment: This statement indicates that leaching pools "*provide **little, if any**, treatment benefit for nitrogen removal and other contaminants such as CECs.*" As previously discussed the conventional sewage disposal systems do provide treatment. If the County is going to continue to make such statements, it should provide empirical evidence to back them up. Once again the question is raised: **As part of the SWP has Suffolk County conducted or participated in any investigations (studies or reports) that investigated the sewage plumes from existing conventional sewage disposal systems (OSDSs), which used leaching rings as the means to discharge wastewater, anywhere in Suffolk County?** Especially regarding "*nitrogen removal and other contaminants such as CECs.*"

If investigations were conducted, what results were obtained? Please supply specific references (studies and reports) and pertinent pages. w

Furthermore, based upon this premise that *leaching pools provide little, if any, treatment*, the County is now promoting **pressurized leaching systems**, based upon the unsubstantiated theory that they provide more and better treatment. **Without a baseline**

of treatment for the conventional systems, the County should not make this assumption. In fact, by moving to pressurized systems the county may be diminishing the leaching abilities of disposal systems. From a practical standpoint, the hydraulics of the system is the most important aspect to the homeowner, who does not want a backup into his or her home. Leaching pools can provide hydraulic heads equivalent to pressurized systems without the need for pumps. The County will only be creating more problems for homeowners by requiring such systems. This is a **negative impact**.

Statement: *The use of alternative leaching technologies have several potential benefits when compared to traditional leaching pools under certain site conditions. Potential benefits of alternate leaching technologies include:*

- *Up to an additional 30 percent reduction in denitrification using gravity-based alternate leaching methods such as gravelless chambers and gravelless geotextile sand filters in silty and loamy soils;*
- *Up to an additional 50 percent reduction in denitrification using PSDs;*
- *Removal of phosphorus ("Nitrogen and Phosphorus Treatment and Leaching from Shallow Narrow Drainfield", Holden et al);*
- *Degradation of CECs that are capable of breaking down biologically (http://1o44jeda9yq37r1n61vqlgly.wpengine.netdna-cdn.com/wp- content/uploads/2019/04/Heufelder_CEC.pdf); and,*
- *More cost effective in locations with shallow groundwater where retaining walls may otherwise be required.*

Comment: This section indicates that there are treatment benefits related to using alternative systems over conventional systems; however, the basis for making these claims is dubious. The one "link" in the statement, supposedly backing the claim that alternative systems remove CEC's better than conventional systems, is just a slide show and not a published study. However, it does state "reasons why the onsite septic system may be an efficient, sustainable way to treat for CEC and offer better treatments than centralized systems." but does not differentiate conventional systems as being less beneficial. Furthermore, the study referenced above, *"Nitrogen and Phosphorus Treatment and Leaching from Shallow Narrow Drainfield", Holden et al.,* involves a drainfield and performed no comparison to conventional systems (leaching pools). How does the SWP relate this to conventional sewage disposal systems? No comparison data is given for leaching pools here in Suffolk County. Once again the question is raised: **As part of the SWP has Suffolk County conducted or participated in any investigations (studies or reports) that investigated the sewage plumes from existing conventional sewage disposal systems (OSDSs), which used leaching rings as the means to discharge wastewater, anywhere in Suffolk County?** Especially regarding "*nitrogen removal and other contaminants such as CECs.*" x

Unless the statements in this section are confirmed, it should be removed from the SWP. This is an example of the poor scientific methodology of the SWP.

1.1.6.4.5 Suffolk County and New York State Septic Improvement Program

This Suffolk County Septic Improvement Program (SIP), is a grant and loan incentive program for I/A OWTS; but it does not provide any incentive for existing homeowners to upgrade their existing systems to conventional standards. The conventional systems, as previously discussed, provide benefits over advanced systems and sewers, and are the most cost-effective. The maintenance and costs associated with advanced systems will be have a **negative impact** on homeowners.

8.4.4.2 Summary of CEC Treatment Performance with Onsite Wastewater Management

Statement: *This literature review provides a summary of available information on the performance of various OWTSs with respect to CEC removal efficiency and transformation.* ***Table 8-19*** *summarizes broad conclusions with respect to OWTSs and CEC removal.*

Comment: The table (8-19) indicates "citations" (references) for the "*study Conclusions with Respect to CEC Removal & Treatment in OWTS"*, however, it does not give sufficient information for us to find the references and verify the conclusions. If not already contained in the references, then they should be and be made available through links where possible. **Until such time the SWP should be considered incomplete and should not be approved.** y

"**Branding nitrogen as the cause of harmful algae blooms is like stating oxygen is the cause of forest fires**." Both are necessary components for the events to occur, but neither cause the event. Obviously, if we could remove all the oxygen from the air, fires could not occur; but then most living things would die. The same is true for removing nitrogen from the surface waters; HABS could not occur, but most of the ecosystem would die, including bad and good algae. The latter is what the SWP proposes to do; and hopefully it does not succeed. z

Is spending 4 billion dollars to reduce nitrogen really going to solve these perceived problems or create more? aa

References

See September 4, 2019 Report and the links in this Report for other references

Gobler, C.J., Bradley B.J. & Wall C.C. 2009, *Assessment of the impact of Nutrient loading, bivalve filtration and phytoplankton communities on estuarine resources*. Final Report to the Nature Conservancy.

Appendix A

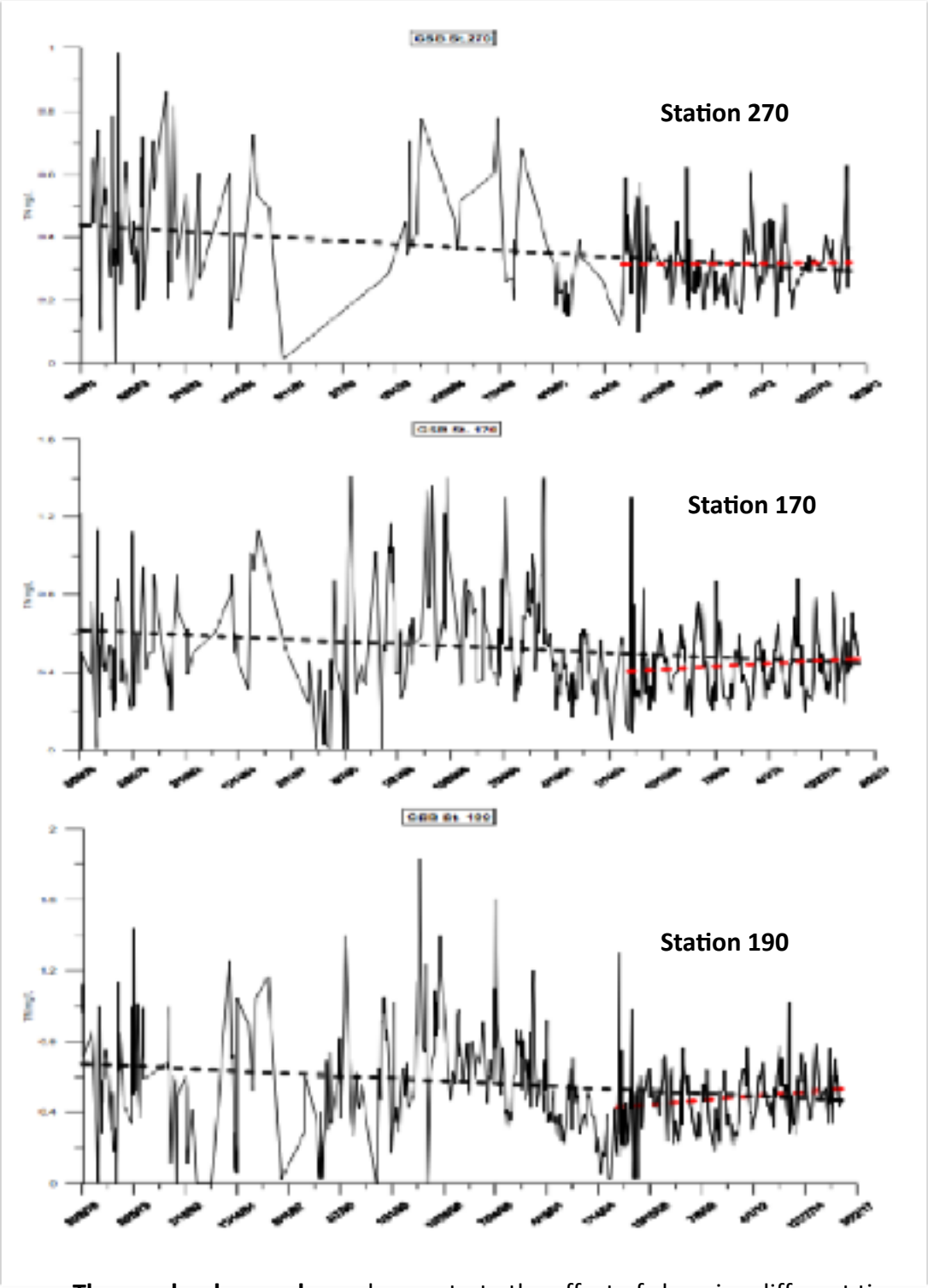
Tollefsen Comments

Akras Comments (NA):

Reynolds Comments 5th

Reynolds Comments 6th

<u>Appendix B</u> – Selected Sampling Stations in the Great South Bay (190 & 270) and Moriches Bay (170)



The graphs shown above demonstrate the effect of choosing different time periods of data to express different trends. In this case the SWP chose a ten year period between 2006 and 2016 (shown as a red dashed line) and calculated an upward trend in nitrogen concentrations. Using a 40 year period, the trend is downward (black dashed line).

See responses to detailed comments 18 and 18a

A Guide to Comments in the DGEIS/SWP Review Document-Phase 1 Comments dated September 4, 2019

All the nitrogen loading calculations and conclusions used in the SWP are in question. (pages 5-9)

- Contrary to the SWP's statement, conventional Onsite Sewage Disposal Systems (OSDSs) are designed to treat wastewater and to remove nitrogen. (page 5)
- The SWP skewed results and conclusions and exaggerated nitrogen loading from conventional sewage disposal systems. (pages 6-9)
- Naturally occurring denitrification in coastal areas were ignored or underrated in the SWP. (page 7)
- The SWP has given no evidence that empirical studies have been done on existing conventional sewage disposal systems that would justify the nitrogen reduction assumptions used in the computer modeling. (page 9)

The SWP does not offer a practical, cost-effective or short term strategy to deal with the immediate problem of failed sewage disposal systems. (pages 10-13)

- Some of the strategies being presented by the SWP will be harmful in both the long and short run. (page 11)
- The SWP fails to recognize conventional systems as a viable strategy resulting in a negative impact. (page 11)
- The SWP needs to address more cost effective and practical help for homeowners with pre-existing OSDSs. (page 12)
- The SWP sewering strategy will have a **negative impact** (12)
- The "Proposed Action", as is, will have a negative impact on the quality of life, safety and public health of the residents of Suffolk County. (pages 11-12)

What is really causing harmful algae blooms? (pages 12-18)

- The SWP makes no attempt to consider the nutritional needs of our bays. (page 12)
- The Plan distanced itself from the ecosystem that the Public believes will somehow be nurtured (page 13)
- The SWP strategy for the control of harmful algae is to simply starve them of nitrogen. (page 15)
- It is under low nitrogen conditions that HABs have shown competitive advantages over other algae. (page 15)

- If we further reduce the nitrogen loading to our bay, we will decrease shellfish populations, increase the effect of intermittent nitrogen loadings and increase the potential for HABs. (page 15)
- "Successful" nitrogen reductions have not yielded the expected results. (page 15)
- Sewer systems have upset the nutrient balance to favor Brown Tides. (page 16)
- HABs are predominately associated with those water bodies that have the lowest nitrogen loadings (page 17)
- Brown Tide blooms occur when inorganic nitrogen levels are low (page 17)
- High nutrient concentrations resulted in healthy shellfish populations (page 17)
- High nutrient concentrations have resulted in healthy shellfish populations. (page 17)

The SWP misportrays the water quality in Suffolk County with "sobering statistics". (pages 20-25)

- The SWP incorrectly paints a grim picture of water quality in Suffolk County by using selected statistics. (page 20)
- It appears that the SWP's choice to lump together sampling station data, has presented a misportrayal of the nitrogen concentrations in the Great South Bay; and masked the existing low concentrations of nitrogen in the bay. (page 20-24)
- The SWP's claim that the Southwest Sewer District lowered ammonia concentrations in selected streams has not been scientifically proven. (page 23)

Other Impacts (pages 25-34)

- The SWP does not adequately address noise and odors resulting from the implementation of the "*Proposed Action*". (pages 25-28)
- Reduction in total nitrogen loading to surface waters and groundwaters has not been shown to have an impact on water quality that will result in an improvement in human health. (page 28)
- Upgrading of failed systems and old/grandfathered systems with new conventional systems built to conventional standards will result in increased separation of the system to the groundwater table and reduced failures which in turn results in less human health hazards associated with exposures to

sewage and potential physical harm from a collapsed system. (page 28)

- It has not been proven that reduced nitrogen concentrations will result in a reduction in the number and intensity of HAB events on a countywide basis; nor would it result in reduced HAB's related toxins within shellfish or increased protection of human health. (page 28)
- The SWP strategy of "diverting" our water supply into coastal waters through sewage treatment plant outfalls is a strategy doomed for failure. (page 29)
- The DGEIS should recommend a policy that prevents additional expansion of wastewater flows, both from within and outside the coastal outfall sewer districts; so as to prevent negative impacts on the water supply. (page 29)
- The DGEIS should have declared that sewering to coastal outfalls would result in a negative impact. (page 30)
- The DGEIS should have determined that leaving the fate of the water supply in the hands of zoning boards would result in a negative impact. (page 30)
- The commitment of resources will be higher with the implementation of the Proposed Action and resultantly have a potential negative impact. (page 31)
- The DGEIS and SWP should include the option of using conventional sewage disposal systems in its analysis and as part of the *Proposed Action* to mitigate negative impacts. (page 31)
- The SWP provides no evidence that conventional sewage disposal systems are the source of any pathogens found in surface waters. (page 33)

Electronic copy of this document and SWP Comments at: http://tiny.cc/SWPreviews

From:
Sent: Tuesday, September 10, 2019 12:29 PM
To:
Cc:
Subject: FW: i object!

From: Caniano, Anthony
Sent: Tuesday, September 10, 2019 12:27 PM
To: Caniano, Anthony
Subject: FW: i object!

From: Zaltsman, Alexander [mailto:zaltsman@bnl.gov]
Sent: Tuesday, September 10, 2019 10:11 AM
To: Zegel, Ken <Ken.Zegel@suffolkcountyny.gov>
Subject: i object!

ATTENTION: This email came from an external source. Do not open attachments or click on links from unknown senders or unexpected emails.

I totally object this action!

Stop!

From:
Sent: Tuesday, September 10, 2019 12:08 PM
To:
Subject: FW: Septic System Upgrade

-----Original Message-----
From: Josette Perciballi [mailto:josette929@gmail.com]
Sent: Tuesday, September 10, 2019 10:33 AM
To: Zegel, Ken <Ken.Zegel@suffolkcountyny.gov>
Subject: Septic System Upgrade

ATTENTION: This email came from an external source. Do not open attachments or click on links from unknown senders or unexpected emails.

Dear Mr. Zegel,

I am aware that the County is on a crusade to protect our water supply which I know is extremely important. However, my question is concerning how the County plans on having the homeowner pay the very ridiculously high price of upgrading their systems. I have heard several versions of how the County expects to accomplish this, but I would like you to explain exactly what the actual plan is.
Thank you in advance.

Sincerely,

Josette Perciballi (Mrs.)
29 East Amber Lane
Wading River, New York 11792

From:
Sent: Tuesday, September 10, 2019 12:06 PM
To:
Subject: FW: cesspools

From: Elyse Rockowitz [mailto:ERockowitz@familyres.org]
Sent: Tuesday, September 10, 2019 11:07 AM
To: Zegel, Ken <Ken.Zegel@suffolkcountyny.gov>
Subject: cesspools

ATTENTION: This email came from an external source. Do not open attachments or click on links from unknown senders or unexpected emails.

Just another nail in the coffin for people of Suffolk county. As a senior citizen who would like to be able to continue to reside in my house, i am against this cesspool plan. Understood that it will affect home sales but i believe it is also going to affect those who will need to replace their existing cesspools should the need arise. And what maintenance costs will then be incurred once the new septic system is in place? What other more cost effective solutions have been explored? What about run off, the use of fertilizers for lawns, etc. etc?

==========
========== CONFIDENTIAL COMMUNICATION THIS TRANSMISSION IS INTENDED ONLY FOR THE INDIVIDUAL OR ENTITY TO WHICH IT IS ADDRESSED AND CONTAINS INFORMATION THAT IS CONFIDENTIAL. IF YOU HAVE RECEIVED THIS COMMUNICATION IN ERROR, PLEASE DESTROY THE MATERIALS AND CONTACT THE SENDER IMMEDIATELY AT Family Residences and Essential Enterprises, Inc. 516-870-1600. THIS INFORMATION HAS BEEN DISCLOSED TO YOU FROM CONFIDENTIAL RECORDS AND IS PROTECTED BY FEDERAL AND STATE LAW. THIS INFORMATION MAY INCLUDE CONFIDENTIAL MENTAL HEALTH, SUBSTANCE ABUSE, ALCOHOL ABUSE AND/OR HIV-RELATED INFORMATION. FEDERAL AND STATE LAW PROHIBITS YOU FROM MAKING ANY FURTHER DISCLOSURE OF THIS INFORMATION WITHOUT THE SPECIFIC WRITTEN CONSENT OF THE PERSON TO WHOM IT PERTAINS, OR AS OTHERWISE PERMITTED BY LAW. ANY UNAUTHORIZED FURTHER DISCLOSURE IN VIOLATION OF THE LAW MAY RESULT IN A FINE OR JAIL SENTENCE OR BOTH. A GENERAL AUTHORIZATION FOR THE RELEASE OF THIS INFORMATION MAY NOT BE SUFFICIENT AUTHORIZATION FOR FURTHER DISCLOSURE.
==========
==========

From:
Sent: Tuesday, September 10, 2019 4:01 PM
To:
Subject: FW: Re. mini sewage-treatment plants

From: markkr1818@gmail.com [mailto:markkr1818@gmail.com]
Sent: Monday, September 09, 2019 10:19 PM
To: Zegel, Ken <Ken.Zegel@suffolkcountyny.gov>
Subject: Re. mini sewage-treatment plants

ATTENTION: This email came from an external source. Do not open attachments or click on links from unknown senders or unexpected emails.

Dear Mr. K. Zegel,

I have study carefully plan for the Subwatersheds Wastewater mandatory installation in the Suffolk County and I came to the following conclusion:

1. Environmental benefits of this program would be minimal if any. Compare to the other sources of contamination (fertilizers, nitrogen in the air, pollution from the Suffolk County overdevelopment, Inferior drainage system etc.) there will be no significant improvement in the Public Health conditions; a
2. I found that there were done insignificant scientific study, research and data collection for justification of this program b
3. In many cases installation of those devices will negatively impact established landscaping arrangement significant additional owner's cost. c
4. This project will be associated with unaffordable cost that would be unbearable burden for the people of the Suffolk County, especially for senior people with income limitations as well as for young homeowners. d

Summarizing above said I object this unproductive and costly project.
Please take my opinion into considerations for your future actions.

Sincerely,
Mark Krichever
26 Carldon Lane
Hauppauge, NY 11788
Phone: 631-265-6739
Email: markkr1818@gmail.com

From:
Sent: Wednesday, September 11, 2019 10:34 AM
To:
Subject: FW: Cesspools in Suffolk

From: R Tappero [mailto:rtappero@gmail.com]
Sent: Wednesday, September 11, 2019 10:26 AM
To: Zegel, Ken <Ken.Zegel@suffolkcountyny.gov>
Subject: Cesspools in Suffolk

ATTENTION: This email came from an external source. Do not open attachments or click on links from unknown senders or unexpected emails.

Dear Ken Zegel P.E.,

I am writing to comment about Suffolk county's plan to demand homeowner septic system upgrades. As a new homeowner, I am struggling to keep up with the increased taxes and maintenance costs. Other young colleagues of mine at Brookhaven National Lab are struggling with the same problem. It costs too much to stay on LI. And this is making talent acquisition difficult- even for STEM jobs. a

I would also like to mention that I am a Soil Chemist and deal with soil, water and air quality issues in my research. In fact, I was employed by the CA Regional Water Quality Control Board (RWQCB) for a number of years. As a Ph.D. level scientist who specializes in soil and water quality, I have little concern about subsurface residential wastewater treatment in a relatively low-density area such as Suffolk County (despite sandy soils and perched water). b

I hope you will consider all the impacts of this plan to demand septic system upgrades.

Kind regards,
Ryan Tappero

From:
Sent: Wednesday, September 11, 2019 9:57 AM
To:
Subject: FW: Proposed septic systems.

-----Original Message-----
From: jimmangelli [mailto:jimmangelli@gmail.com]
Sent: Tuesday, September 10, 2019 6:45 PM
To: Zegel, Ken <Ken.Zegel@suffolkcountyny.gov>
Cc: idamangelli@hotmail.com; jimmangelli@hotmail.com
Subject: Proposed septic systems.

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My wife and I are strongly opposed to the proposed septic system requirement. Between this and the current Peconic Bay tax first time home buyers will not be able to purchase homes. Sellers will be greatly impacted and forced to dramatically lower the price of their homes for sale.
Please do not allow this regulation to be law.
Thank you

Sent from my iPad

Robert J. Angelo
53 Cheemaun Trail
Ridge, New York 11961

9/9/19

Ken Zegel PE
Assistance Public Health Engineer
Suffolk County Department of Health Services
Office of Ecology
360 Yaphank Avenue
Suite 2B
Yaphank, NY 11980

Re: Suffolk County Waste Water Plan

Gentlemen:

I am writing to voice my concerns with the counties proposed upgrade to our current septic systems. While I applaud the effort to clean up the environment, I feel the cost to the residents that are affected are excessive and the burden to low income or elderly homeowners on a fixed income is UN-justifible.
The DGEIS (Draft of General Environmental Impact Statement) does not clearly explain why this drastic measure is required or justify the cost and economic impact this measure will have.
The expense of $20,000 (+/-)is totally unrealistic and the County proposed grant money has no funding so taxes throughout the county will need to be raised to provide this funding.
The proposed "grant" has a limit of $10,000 borrowing money with a proposed 15 year – 3% interest loan. This will be in addition to the already high real estate taxes we are burdened with, not to mention the initial outlay of $10,000 to get started. a
I also feel there is insufficient evidence as to the performance or reliability of the new septic systems. b
I feel the residents of Suffolk County need more information and should also be allowed to vote on a referendum or as a proposal in a general election. Perhaps a proposal in the upcoming elections to install sewer systems throughout the county. c
I feel residents would be more receptive to paying increased taxes for sewer systems before they are forced to spend $20,000 for systems that are not in use long enough to provide evidence that they do work.
I believe we need more time to review the possible increase use of organic fertilizers, etc., and the mandating of treating our cesspools with natural biologics.
We need a more balanced approach with all concerned parties before the county mandates this capital expense on their residents.

Thank you for your time and consideration.

VTY,

Robert J Angelo

Home phone – 631-929-3093
Cell phone - 917-670-1826
e-mail – mckay2@gmail.com

From:
Sent: Thursday, September 12, 2019 4:36 PM
To:
Subject: FW: septic systems update

From: HAWKINS [mailto:dhawkins12@optimum.net]
Sent: Thursday, September 12, 2019 4:00 PM
To: Zegel, Ken <Ken.Zegel@suffolkcountyny.gov>
Subject: septic systems update

ATTENTION: This email came from an external source. Do not open attachments or click on links from unknown senders or unexpected emails.

This message concerns the county's plan to demand homeowner septic system upgrades. I believe in climate change and in order to have cleaner waterways, we need better septic systems. We do, however, pay very high county property taxes, and I feel that the county should foot the bill for at least half the cost of a new septic system if the county is demanding that the system be replaced. There is no reason why a homeowner should have to pay $20,000 for a new septic system. This would raise the price of a home when it is put up for sale or the seller would have to take a loss. When town water was proposed for homeowners who still had well water, that was a choice; you could either get town water or keep your well. Putting in a new septic system does not seem to be a choice; it's a mandate! Thank you for your time.

Nancy Hawkins

Wading River, NY

From:
Sent: Friday, September 13, 2019 10:49 AM
To:
Subject: FW: Cesspool

From: Zegel, Ken
Sent: Friday, September 13, 2019 10:33 AM
To: Caniano, Anthony
Subject: FW: Cesspool

From: McMullan [mailto:stewartpm@optonline.net]
Sent: Friday, September 13, 2019 10:33 AM
To: Zegel, Ken <Ken.Zegel@suffolkcountyny.gov>
Subject: Cesspool

ATTENTION: This email came from an external source. Do not open attachments or click on links from unknown senders or unexpected emails.

Mr. Ken Zegel:

I am appalled that our legislators think that the new Cesspool proposal is a good idea. Everyone fully understands the needs to protect our water source but this is an overreach. It is putting a tremendous financial burden on families that already are struggling to make ends meet on Long Island.

I would appreciate you forwarding my e-mail to all those involved in the decision process.

Thank you,

Stewart McMullan

12 Russell Drive

Wading River, NY 11792

631 886-2346

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
290 BROADWAY
NEW YORK, NY 10007-1866

SEP 13 2019

Walter Dawydiak
Director, Division of Environmental Quality
Suffolk County Department of Health Services
Office of Ecology
360 Yaphank Avenue, Suite 2B
Yaphank, NY 11980

Dear Mr. Dawydiak:

On behalf of the U.S. Environmental Protection Agency (EPA), Region 2, I commend you and your colleagues on the recent completion of the Suffolk County Draft Subwatersheds Wastewater Plan (SWP). Nitrogen pollution of Long Island's surface and groundwater has become a critical ecological, economic and human health issue, and we applaud the County's efforts to develop a county wide wastewater upgrade strategy.

We believe that partnerships between government agencies, businesses and impacted communities are a very effective way to address such vexing issues. We know that Suffolk County and the New York State Department of Environmental Conservation have invested significant resources in this endeavor and that additional investments will be needed to support plan implementation.

EPA is pleased to have participated in the development of this plan and we have seen first-hand the dedication and energy that the county has put into developing the SWP. The SWP sets targets for reducing nitrogen pollution to Suffolk County's marine waters based upon a strong technical foundation and is consistent with the objectives of the similarly intentioned Long Island Sound Nitrogen Strategy. We support the County in highlighting the threat to its coastal waters, communicating where nitrogen reductions are the highest priority, and putting into place the programs needed to practically reduce nitrogen pollution and improve water quality for the citizens of Suffolk County.

Of course, as with many ambitious plans, implementation will present challenges. We encourage Suffolk County to move forward with the four program phases described in the plan.

Please know that EPA appreciates the challenge that the county faces and stands with it on this important environmental issue.

Sincerely,

for

Javier E. Laureano, Ph.D.
Director
Water Division

From:
Sent: Friday, September 13, 2019 5:18 PM
To:
Subject: FW: 20K Septic Systems

From: Edna Giffen [mailto:egiffen46@optonline.net]
Sent: Friday, September 13, 2019 12:29 PM
To: Zegel, Ken <Ken.Zegel@suffolkcountyny.gov>
Subject: 20K Septic Systems

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Dear Mr. Zegel,

I am deeply concerned about this County Wastewater Plan. From what I have read I do not see clearly stated that this system will in fact preform the way that is expected. Also $20,000 would only be the beginning as there is there will be an increase in the monthly electrical bill. I also do not see any discussion as to how else the nitrogen clean-up will occur. Articles have frequently been written that the nitrogen in fertilizers are a major contributor, as is runoff from roads. I do believe in science and the need for improvement, but I do not see by the "Draft of the General Environmental Impact Statement" that such improvement will definitely occur. All of us who live in non-sewer sections of Suffolk County should become experimental stations for a very expensive system. In 5 years after some people have been forced or voluntarily put this system in will the statement be made "oh, well, the system is not working as expected therefore there is no need for others to put the system in as we now have a better system." There are too many unanswered questions. Edna Giffen, Mt. Sinai

From:
Sent: Monday, September 16, 2019 9:20 AM
To:
Subject: FW: Cesspool Comment

From: Deborah Keller [mailto:handsdownmassage@hotmail.com]
Sent: Sunday, September 15, 2019 11:56 PM
To: Zegel, Ken <Ken.Zegel@suffolkcountyny.gov>
Subject: Cesspool Comment

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As a constituent and tax payer for District 1 Long Island, I am voicing my concerns over the cesspool issue. I heard that it is under consideration to demand homeowners to upgrade their septic systems at considerable expense ($20,000.) . Although I am well aware of the fragile nature of our aquifers, and the impact cesspools have on the health/or quality of life for all of Long Island, I am particularly concerned of the difficulty for Seniors living on fixed incomes to afford these upgrades. a

Why have the Public not been alerted until the "Midnight" hour? I see that the SC Department of Health Services has been considering this since 2016!!

Shamelessly, government is keeping silent on issues that impact pocketbooks, working behind the scenes, adverising enough to avoid litigation, so laws can be enacted on unsuspecting Americans!

I think it behooves you to extend the comment period, and conduct a survey of a broad base of residents to find out what is wanted! b

We need offers of viable financing incentives and solutions for funding big ticket items such as a septic system overhaul, similar to Solar Panels in the 1970s - 1980's!!

I look forward to your reply,
Deborah Keller

From:
Sent: Monday, September 16, 2019 9:21 AM
To:
Subject: FW: Septic System Proposal Is a Bad Idea

From: jkfooddetective@optonline.net [mailto:jkfooddetective@optonline.net]
Sent: Sunday, September 15, 2019 11:03 PM
To: Zegel, Ken <Ken.Zegel@suffolkcountyny.gov>
Cc: jkfooddetective@optonline.net
Subject: Septic System Proposal Is a Bad Idea
Importance: High

ATTENTION: This email came from an external source. Do not open attachments or click on links from unknown senders or unexpected emails.

Ken,

I have to say, I am all for conservation and recycling. The proposed Septic System Plan to force homeowners selling their home to replace a cesspool with a Septic System is ridiculous. I sold my home in Riverhead Town five years ago which decreased the income because of the Peconic Tax. Now Suffolk County is considering tacking on this Septic System Plan. Do you want any of the kids to live on Long Island? The number I hear is over $20,000.00. That could be the difference which would keep a home buyer from paying PMI insurance. There has to be another alternative. How about banning fertilizer that contaminates the water supply? At least this won't decimate the real estate market on Long Island. People will have to pay a little more but the results would be so much more beneficial. a b

PLEASE DO NOT TRY TO SNEEK THIS IN WHILE NO ONE IS PAYING ATTENTION. THIS SHOULD BE PUT ON A BALLET NOT VOTED IN BY SOME COMMITTEE. c

I'd appreciate a response.

Thank you.

Jim Klein
jkfooddetective@optonline.net

From:
Sent: Monday, September 16, 2019 9:31 AM
To:
Subject: FW: proposed mandated nitrogen abatement for existing homes

From: Harold Moskowitz [mailto:springwood14@aol.com]
Sent: Sunday, September 15, 2019 9:07 PM
To: Zegel, Ken <Ken.Zegel@suffolkcountyny.gov>
Subject: Fwd: proposed mandated nitrogen abatement for existing homes

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-----Original Message-----
From: Harold Moskowitz <springwood14@aol.com>
To: ken.zegel <ken.zegel@health.ny.gov>
Sent: Sat, Sep 14, 2019 10:29 pm
Subject: Fwd: proposed mandated nitrogen abatement for existing homes

-----Original Message-----
From: Harold Moskowitz <springwood14@aol.com>
To: ken.zegel <ken.zegel@suffolkcounty.gov>
Sent: Sat, Sep 14, 2019 12:44 am
Subject: proposed mandated nitrogen abatement for existing homes

Dear Sir,

The first cesspool that was installed for a home would have been installed as close as allowable to the foundation and in as straight as possible in line with the waste pipe leaving the home. An overflow pool would have been installed a little further away. If the home is currently using a replacement cesspool and over flow pool, they are still further away from the waste pipe exiting the home. Please keep in mind that at the time of installation of those two cesspools and overflow pools, the toilets had a 6.0 gallon toilet tank. Toilets today have a 1.2 gallon flush tank!

If the mandated new system is installed, it can't go where the previously used and now filled in cesspools and overflow pools were installed. It also can't go under the driveway. Therefore it would have to be installed in the opposite side of the front yard from where the original cesspool had been installed. This makes for a considerably longer run of waste piping and not necessarily without sharp curves in the line. A 1.2 gallon flush will not carry the solid waste the required distance. Waste will inevitably collect in the waste line leading to backups. This would especially be the case where solid waste accumulated in the waste line before having to negotiate curves in the line and dried out from periods of non-use such as vacations or spending extended stays away from home.

If this is mandated and the people face plumbing back ups on a fairly regular basis, there will be a lot of unhappy, even angry Suffolk County residents. Perhaps this whole venture should be rethought and further studied from all angles and perspectives for all possible ramifications before it comes back to haunt the people who forced it onto Suffolk residents.

Sincerely,

Harold Moskowitz

From:
Sent: Monday, September 16, 2019 9:33 AM
To:
Subject: FW: Cesspool Regulation Proposal Comment

From: VINCENT RUGNETTA [mailto:vcr712@comcast.net]
Sent: Sunday, September 15, 2019 11:02 AM
To: Zegel, Ken <Ken.Zegel@suffolkcountyny.gov>
Subject: Cesspool Regulation Proposal Comment

ATTENTION: This email came from an external source. Do not open attachments or click on links from unknown senders or unexpected emails.

Mr. Zegel,

Like wind power and solar power we must begin to find alternatives to the manner in which we interact with our environment to protect it for the health and well being of future generations. I/A OWTS appears to be an alternative to building multi- billion dollar sewer and waste water projects throughout the county. Having mini-wastewater treatment facilities at each home instead of cesspools is a start even though it will cost homeowners. At least some systems should be installed and tested over the long term to see their effectiveness. A gradual implementation of I/A OWTS or future, effective technology is a direction that the county should be driving towards.

Whether we pay now for more effective on-site residential/commercial systems or later through increased taxes for massive community wastewater treatment facilities, we are still going to have to pay.

I support the County's efforts in addressing our wastewater/drinking water health issue.

Vincent C. Rugnetta

36 Creek Road

Wading River

From: Jim Soviero <jamessoviero@hotmail.com
Sent: Saturday, September 14, 2019 1:24 PM
To: Zegel, Ken
Subject: Low nitrogen systems

ATTENTION: This email came from an external source. Do not open attachments or click on links from unknown senders or unexpected emails.

Dear Mr. Zegel,

As many of us learn some troubling details regarding the cost and installation of these low nitrogen systems, it would seem in the very best interest of all concerned, but especially LI homeowners, to allow for more very public notice of any future meetings.
Here's one example:
How many, already heavily taxed Suffolk County residents understand that these $20,000 + systems, not including yearly maintenance, come with only a three year warranty? How would that compare to their experiences with septic and cesspool systems that have lasted, without problems, for decades?

Thank you for your time and consideration in this matter.

Sincerely,

Jim Soviero

From: sorento0222@1791.com
Sent: Friday, September 13, 2019 11:24 PM
To: Zegel, Ken
Subject: COMMENT - S.C. Subwatershed Wastewater Plan

ATTENTION: This email came from an external source. Do not open attachments or click on links from unknown senders or unexpected emails.

Dear Mr. Zegel,

The following reasons why I am opposed to the SWP, Suffolk County Subwatershed Wastewater Plan.

The high cost of installing the system. a
The high cost of maintaining the system.
The electric costs to operate the system.
The additional taxes, whether it be on our water bills or some other form, how much more can we take?
The constant pumping out of the system, of which 34 years in my home, I've only had to empty my septic system once and that was due to a faulty toilet.
The complete destruction of our landscaping. b
The fact that we'll have to be looking at those sightly manhole covers on our property for eternity.
The fact that those grants aren't free, they come with a 1099 statement. c
The fact that our property values will most likely decrease.
The fact that we're well aware of the demand for more density on the island, which will add to the pollution/**NITROGEN** issues, that they're blaming our cesspools/septic tanks for.
The fact that these systems haven't had ample time to be studied and tested for a long period of time, to deem them adequate at all. d

The fact that there is no proof that our cesspools/septic systems are e
contributing to the **NITROGEN** levels in our waters.
The fact that we have over 199 sewer treatment plants in Suffolk f
County alone, that ARE contributing to the **NITROGEN** problem.
The fact is, we know that the sewer treatment plants are not able to eliminate the **NITROGEN** completely, if at all, after being discharged into the waters or our ground water.
The fact that Peter Scully, Suffolk deputy county executive, said, ***"that he expected the conversation to take place over several years, saying that the county first wanted to see the approved systems develop a track record of success."*** (Newsday - 4/26/18)

SO WHAT'S WITH THE RUSH ALL OF A SUDDEN??? g

So, let's fix the issue with our current sewer treatment plants, which are proven to be contributing to the pollution/**NITROGEN** in our waters, before we make another decision that could cause irreversible effects on our precious island and the homeowners.

Thank you for your time.

Sincerely,
deborah

From: Ginger Johnson <gingerjohnson19@gmail.com>
Sent: Saturday, September 14, 2019 9:27 AM
To: Zegel, Ken
Subject: opposition to proposed septic system changes

ATTENTION: This email came from an external source. Do not open attachments or click on links from unknown senders or unexpected emails.

Dear Mr. Zegel,

I am writing to express my **opposition** to the proposed county law that would require homeowners to replace their cesspools with a new septic system upon selling their home at a cost of approximately $20,000.

This proposal is excessively burdensome on homeowners and will result in tremendous hardship for those who need to sell their home. It also seems to be placing the blame of the water pollution present in Suffolk County upon home owners rather than on the primary culprits, sod farms and agriculture lands excessive and indiscriminate use of fertilizers. a b

In addition government leaders and town planners have failed to progress with the times and improve drainage and inadequate public wastewater treatment plants claiming that it is too expensive. It is a problem that should be budgeted for and addressed one neighborhood at a time beginning with those that are closest to the shores and other water systems that are in jeopardy.

Also, new zoning regulations should be put in place to require residential and commercial developers to utilize improved wastewater systems and create water treatment facilities upon construction. Legislators could also consider laws that would limit the sell and use of certain fertilizers and other pollutants in Suffolk county. Stricter laws could also be considered for lawn care companies who service both residential and commercial properties limiting the products that they are allowed to use, as well. b

Finally, educating the public on the role that they can play in improving the water quality by avoiding use of certain products needs to improve and be more specific. We continually hear about the problem with our water in the news but the information about specific ways we can address it by avoiding use of certain products and changing our behaviors is rarely mentioned. Education needs to be simple, explicit, and direct. Inform us of the names of the materials and products we should not be using and suggest alternate methods. c

Respectfully,
Ginger Johnson, Shoreham

From: Chris Klassert <cklassert@cvdequipment.com>
Sent: Friday, September 13, 2019 8:12 PM
To: Zegel, Ken
Cc: Chris Klassert
Subject: SUBWATERSHEDS WASTEWATER PLAN

ATTENTION: This email came from an external source. Do not open attachments or click on links from unknown senders or unexpected emails.

Mr. Ken Zegel,

I am writing you in regard to the Subwatersheds Wastewater Plan.
I am a Suffolk County property owner with 1.5 acres in Center Moriches north of Montauk Highway.
I have a septic system that is properly sized for the dwelling which has been operating for many years.
I have one bathroom and laundry room in the house.
I find this Subwatersheds Wastewater Plan to be nothing more than a Trojan horse which will pave the way for more development.
I as well as the many people that I have discussed this with are firmly against this plan.
All I can do at this time is hope that the Suffolk County government officials involved with this ill-conceived plan come to their senses.
The initial installation cost of 20K dollars and subsequent annual maintenance costs are going to break the backs of all Suffolk County residents.
If at all possible, see to it that this plan never sees the light of day.

Regards,

Chris Klassert
Tel: 631.874.4755

Water for Long Island

Our Mission: to work with Long Island water suppliers, governmental entities and officials, community and environmental groups, academic institutions, conservationists, individuals and others who are concerned about the water and drinking water conditions of Long Island and to advance actions for effective groundwater and water supply management.

September 16, 2019

BY ELECTRONIC MAIL
Ken Zegel, PE
Suffolk County of Department of Health Services
360 Yaphank Ave
Suite 2B
Yaphank, NY 11980
ken.zegel@suffolkcountyny.gov

Re: Comments on the Suffolk County Subwatersheds Plan GEIS

Dear Mr. Zegel:

We, the undersigned, are submitting the following comments on Suffolk County's Subwatershed Wastewater Plan (SWP) Draft DGEIS.[1] After reviewing the DGEIS for wastewater management and attending a sparsely attended public hearing (September 6, 2019) at Suffolk Community College, we also offer the following suggestions and recommendations.

GENERAL COMMENT

The environmental impact to the waters of Suffolk County from discharged wastewater (treated and untreated) raises a variety of problems, issues and concerns. The impact to surface waters, which the Subwatershed Plan mainly addresses, raises a large set of issues and problems that are different from those connected with groundwater. It is the current policy of Suffolk County that …"Nitrogen is public water enemy #1…)[2] However, the second most significant water pollutant is volatile organic chemicals (VOCs) which is another **priority contaminant group** according to the 2015 Water Resources Plan.[3] Even though there are hundreds of public water supply wells affected by VOCs across Suffolk County, there are less than 10 wells requiring active treatment for nitrates. Therefore, the general conclusion from reviewing the DGEIS is that surface water quality will primarily benefit from the actions envisioned in the SWP. However, these actions are not intended nor will they significantly protect groundwater from the chemicals that present the most imminent threat to drinking water quality. These chemicals represent a significant impact that is inadequately addressed in the DGEIS and SWP. a

[1] *Draft Subwatersheds Wastewater Plan Generic Environmental Impact Statement*, Suffolk County Department of Health Services, June 2019.
[2] *Suffolk County Comprehensive Water Resources Management Plan*, 2015. Executive Summary, pg. E-2.
[3] Ibid, Executive Summary, pg. E-2.

INSUFFICIENT PUBLIC NOTICE OF THE SWP

There has been insufficient publicity for the public review and comment on the SWP. Apart from a large article in *Newsday* regarding the plan in early August 2019, very little follow-up has appeared in the general media. The two hearings were held in the last week of August when many people are on vacation and away. A more expansive publicity blitz would have been expected for months in connection with a program as large and expensive as this will be. Also, the short time for comment (30-days) and the time for public comment after the public hearings have (and will be) been
b insufficient. We recommend that the public comment period be extended and more widely publicized. We represent many not-for-profit organizations on Long Island and we can report that our members and the vast majority of residents of the county are unaware of the SWP and the DGEIS that is before them for review and comment.

REDUCTION OF NITROGEN IN GROUNDWATER

The nitrogen problem in Long Island's groundwater was first publicized in *the Long Island Comprehensive Waste Treatment Plan* that was prepared by the Long Island Regional Planning Board in 1978 pursuant to Section 208 of the Federal Water Pollution Control Act Amendments of 1972 (PL 92-500), which is usually referred to as the "Long Island 208 Study." Over the last 41 years since the Long Island 208 Study was published, very few recommendations in the plan regarding the infiltration of nitrogen from onsite waste disposal systems into the groundwater have been implemented. Consequently, severe damage has been done to the environment and the economy. Nitrogen discharging into the bays on both the North and South Shores *via* the groundwater, or directly, has damaged wetlands and the shell fish industry. Hazardous algal blooms (HAB) have affected other wildlife, fisheries, and the tourist industry.

With respect to drinking water, nitrogen levels do not appear to be a major problem as yet. However, Suffolk County cannot continue to use its aquifers for both water supply and waste disposal without severe damage ultimately occurring. Wastewater discharges contain not only nitrogen but a wide assortment of other pollutants that also degrade groundwater and lead to its contamination. Given that it will take decades to implement the SWP, it is essential to start now on preventing increases in nitrogen and other compounds that will inevitably occur in the drinking water without action.

SEWERING

The SWP calls for installing traditional sewers in some areas where the onsite systems are inappropriate or impractical, such as areas where the water table is high or in densely populated areas. However, sewers carry their own impacts such as the impact to the offshore environment for secondarily treated sewage and the potential reduction in groundwater supply in some areas. We recommend that the use of centralized sewer systems be minimized to the extent possible or strategies
c to recycle or recharge tertiary treated wastewaters should be developed.

SYSTEM MAINTENANCE

It is clear from the SWP that annual maintenance of the newly installed advance onsite systems will be necessary. Experience with small, central waste water systems that serve shopping centers, condominium complexes and similar developments shows that the owners fail to routinely conduct maintenance. Contaminants in discharges to groundwater and surface water from these "package-

plants" are frequently well above discharge limits and violate their discharge permits. If many of the hundreds of thousands homeowners fail to maintain their systems the purpose of the SWP will be defeated.

We recommend that the County set up waste water treatment districts for on-site systems and give them the authority, obligation and funding to conduct annual maintenance on these systems. Without this provision, the SWP's impact on the reduction of nitrogen in the groundwater will be limited. d

EMERGING CONTAMINANTS

Over the last few years, it has become clear that emerging contaminants, such as 1,4-dioxane and PFAS, have affected Long Island's groundwater and public supply wells. It will be necessary to address these compounds in the near future, as they (and many other compounds that will be detected in the future) will result in a large cost to public water system customers. These chemicals are found in consumer products that will end up in wastewater. It has been estimated that $840 million may be needed to address the 1,4-dioxane problem on Long Island. While this estimate is not supported by the current level of impact, even the State of New York estimate of approximate $350 million, state-wide, is significant.

It is unlikely that the advanced onsite waste water systems proposed in the SWP will reduce the concentrations of emerging contaminants entering the groundwater system. We understand this area is the subject of considerable research; however, it is not demonstrated that the new systems can effectively remove emerging pollutants. Results from the research into this issue that can be turned into action are probably years, if not a decades, away.

One could argue that the SWP should be delayed until the problem of emerging contaminants is resolved. However, as we indicate above, delaying the SWP risks making nitrogen in groundwater an even more difficult problem to address in the future and it does not resolve the current impacts that are already apparent. In addition, addressing nitrogen alone is to miss the larger understanding that wastewater is a source for many hazardous pollutants that should not be discharged into the drinking water supply. This program has not recognized that wastewater treatment by on-site systems, community systems and central treatment plants must improve over time to treat and remove many pollutants if wastewater is to be discharged back into the ground and groundwater (not to mention coastal waters). The SWP should be expanded to prevent emerging chemicals, such as 1,4-dioxane, PFAS, personal care products, endocrine disruptors and the like from entering the groundwater. e

THE FUNDING PLAN IS NOT EQUITABLE

Suffolk County proposes to offer grants to homeowners to upgrade their wastewater system, if the work is done voluntarily or for new construction. Under the plan it would be necessary to upgrade on-site systems at the time a property is sold; however, no grants would be available at this point. We regard this limitation as counterproductive. We are concerned that property transfers could significantly decline and this approach might needlessly affect the value of property making homeowners reluctant to sell. Grants should be offered under all circumstances that trigger a property transfer. f

Secondly, there are many Suffolk County residents who are already in established conventional sewer districts and they fund wastewater treatment plants that contribute to solving the nitrogen problem. In

some cases, the sewer fees are in the thousands of dollars. These residents should be exempted from paying additional fees to underwrite the county-wide SWP. Many of these residents have already paid twice (once for their own systems plus the cost from the Southwest Sewer District). This practice
g should not be repeated.

WATER FOR LONG ISLAND SUPPORTS THE SWP

To remedy the near shore environmental damage and to protect Long Island's groundwater for the foreseeable future, we support the implementation of the SWP, as long as an equitable funding system can be developed and a maintenance program outside the control of property owners is implemented.

RECOMMENDATIONS

Because the SWP is a forward looking program designed to prevent contamination, it should be expanded to improve groundwater protection from a larger list of pollutants other than nitrogen. SPDES permits that exist, and those granted in the future, should be enhanced to control many chemicals in today's wastewater and to address chemicals that are identified in the future as pollutants of groundwater or surface water. Also, the SWP should specifically make provision for upgrading the newly installed onsite systems if new technology becomes available to address emerging contaminants.

If other, more effective systems are developed for addressing the nitrogen problem over the decades-
h long period of implementation, the SWP should be modified to allow them. Also, the SWP should permit the use of closed septic systems that are in use in many other parts of New York State. These systems are designed to eliminate any discharges to groundwater systems.

Responses should be addressed to the following member of Water for Long Island:

Nicholas Valkenburg, CPG
3 Oakwood Place
Huntington, NY 11743
nickvalkenburg44@gmail.com
631.416.8363 (mobile)

Respectfully submitted,
Water for Long Island

Nicholas Valkenburg, Hydrogeologist, CPG
Sarah Meyland, MS, JD
Elizabeth Bailey
Dr. Charles Bevington
Gerald Ottovino
Paul Blum
Karen Blumer, President, Open Space Council

Water for Long Island

38a

(Comments the same as 38)

Our Mission: to work with Long Island water suppliers, governmental entities and officials, community and environmental groups, academic institutions, conservationists, individuals and others who are concerned about the water and drinking water conditions of Long Island and to advance actions for effective groundwater and water supply management.

October 13, 2019

BY ELECTRONIC MAIL
Ken Zegel, PE
Suffolk County of Department of Health Services
360 Yaphank Ave
Suite 2B
Yaphank, NY 11980
ken.zegel@suffolkcountyny.gov

Re: Comments on the Suffolk County Subwatersheds Plan DGEIS

Dear Mr. Zegel:

We, the undersigned, are submitting the following comments on Suffolk County's Subwatershed Wastewater Plan (SWP) Draft DGEIS.[1] After reviewing the DGEIS for wastewater management and attending a sparsely attended public hearing (September 6, 2019) at Suffolk Community College, we also offer the following suggestions and recommendations. These comments complement the letter we originally submitted on September 16, 2019 with two additional signatories.

GENERAL COMMENT

The environmental impact to the waters of Suffolk County from discharged wastewater (treated and untreated) raises a variety of problems, issues and concerns. The impact to surface waters, which the Subwatershed Plan mainly addresses, raises a large set of issues and problems that are different from those connected with groundwater. It is the current policy of Suffolk County that …"Nitrogen is public water enemy #1…)[2] However, the second most significant water pollutant is volatile organic chemicals (VOCs) which is another **priority contaminant group** according to the 2015 Water Resources Plan.[3] Even though there are hundreds of public water supply wells affected by VOCs across Suffolk County, there are less than 10 wells requiring active treatment for nitrates. Therefore, the general conclusion from reviewing the DGEIS is that surface water quality will primarily benefit from the actions envisioned in the SWP. However, these actions are not intended nor will they significantly protect groundwater from the chemicals that present the most imminent threat to drinking water quality. These chemicals represent a significant impact that is inadequately addressed in the DGEIS and SWP.

---

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INSUFFICIENT PUBLIC NOTICE OF THE SWP

We reiterate that there has been insufficient publicity for the public review and comment on the SWP. Apart from a large article in *Newsday* regarding the plan in early August 2019, very little follow-up has appeared in the general media. The two hearings were held in the last week of August when many people are on vacation and away. A more expansive publicity blitz would have been expected for months in connection with a program as large and expensive as this will be. We do appreciate the fact that the deadline for comments has been extended until October 16, 2019, which will help residents of Long Island gain an understanding of this program. However, we continue to recommend that Suffolk County step up the publicity campaign in the meantime. We represent many not-for-profit organizations on Long Island and we can report that our members and the vast majority of residents of the county are unaware of the SWP and the DGEIS that is before them for review and comment.

REDUCTION OF NITROGEN IN GROUNDWATER

The nitrogen problem in Long Island's groundwater was first publicized in *the Long Island Comprehensive Waste Treatment Plan* that was prepared by the Long Island Regional Planning Board in 1978 pursuant to Section 208 of the Federal Water Pollution Control Act Amendments of 1972 (PL 92-500), which is usually referred to as the "Long Island 208 Study." Over the last 41 years since the Long Island 208 Study was published, very few recommendations in the plan regarding the infiltration of nitrogen from onsite waste disposal systems into the groundwater have been implemented. Consequently, severe damage has been done to the environment and the economy. Nitrogen discharging into the bays on both the North and South Shores *via* the groundwater, or directly, has damaged wetlands and had virtually destroyed the shell fish industry. Hazardous algal blooms (HAB) have affected other wildlife, fisheries, and the tourist industry.

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maintenance. Contaminants in discharges to groundwater and surface water from these "package-plants" are frequently well above discharge limits and violate their discharge permits. If many of the hundreds of thousands homeowners fail to maintain their systems the purpose of the SWP will be defeated.

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One could argue that the SWP should be delayed until the problem of emerging contaminants is resolved. However, as we indicate above, delaying the SWP risks making nitrogen in groundwater an even more difficult problem to address in the future and it does not resolve the current impacts that are already apparent. In addition, addressing nitrogen alone is to miss the larger understanding that wastewater is a source for many hazardous pollutants that should not be discharged into the drinking water supply. This program has not recognized that wastewater treatment by on-site systems, community systems and central treatment plants must improve over time to treat and remove many pollutants if wastewater is to be discharged back into the ground and groundwater (not to mention coastal waters). The SWP should be expanded over time to prevent emerging chemicals, such as 1,4-dioxane, PFAS, personal care products, endocrine disruptors and the like from entering the groundwater.

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Secondly, there are many Suffolk County residents who are already in established conventional sewer districts and they fund wastewater treatment plants that contribute to solving the nitrogen problem. In some cases, the sewer fees are in the thousands of dollars. These residents should be exempted from paying additional fees to underwrite the county-wide SWP. Many of these residents have already paid twice (once for their own systems plus the cost from the Southwest Sewer District). This practice should not be repeated.

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RECOMMENDATIONS

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If other, more effective systems are developed for addressing the nitrogen problem over the decades-long period of implementation, the SWP should be modified to allow them. Also, the SWP should permit the use of closed septic systems that are in use in many other parts of New York State. These systems are designed to eliminate any discharges to groundwater.

Responses should be addressed to the following member of Water for Long Island:

Nicholas Valkenburg, CPG
3 Oakwood Place
Huntington, NY 11743
nickvalkenburg44@gmail.com

Respectfully submitted,
Water for Long Island

Nicholas Valkenburg, Hydrogeologist, CPG
Sarah Meyland, MS, JD
Elizabeth Bailey
Dr. Charles Bevington
Gerald Ottovino
Paula Blum
Karen Blumer, President, Open Space Council
Sandra D'Arcangelo
Ed Olmstead
Jane Thomas

From Jefferson Murphy

39

(Use expanded comments in 39a that follows)

TOWN OF RIVERHEAD
PLANNING DEPARTMENT

201 HOWELL AVENUE, RIVERHEAD, NEW YORK 11901-2596
(631) 727-3200, FAX (631) 727-9101

Jefferson V. Murphree, AICP
Town Building and Planning Administrator
Ext. 239

John F. Flood, Jr.
Environmental Planner
Ext. 207

Karin Gluth
Planner
Ext. 206

Greg Bergman
Planning Aide
Ext. 264

Carissa Collins
Planning Board & Zoning Board Secretary
Ext. 240

September 5, 2019

Ken Zegel, PE
Associate Public Health Engineer
Suffolk County Department of Health Services Office of Ecology
360 Yaphank Avenue, Suite 2B
Yaphank, NY
11980

Re: Suffolk County Wastewater Plan

Dear Mr. Zegel:

The Town of Riverhead applauds Suffolk County Department of Health Services (SCDHS) for its efforts to reduce the decades-long impairment of our groundwater and surface water bodies. Clean, inexpensive and easily accessible water is essential not only to County residents and businesses, but also our natural environment. This endeavor will take a long-term comprehensive approach that requires a strong commitment by our elected and appointed officials to implement. Just as important, this effort will require residents to acknowledge that we all have a part in the solution.

The Draft Subwatersheds Wastewater Plan (SWP) relies heavily on Innovative/Alternative wastewater treatment systems (I/A OWTS) for a large part of water treatment and the removal of excess nitrogen levels in our surface and groundwater. One concern that needs to be addressed is the long-term maintenance costs. For example, were staffing, nitrogen testing and maintenance of systems addressed in the SWP? To convert 819 private residential wells (Households) in Riverhead to I/A OWTS, the total cost to install these systems is $17.31 million. The study indicates use of I/A OWTS systems is the most cost effective means of treatment, but perhaps we should be looking to actually sewer additional areas.

The study indicates the preservation of open space can be the most cost effective approach to protect source water quality. Based on County recommendations, municipalities may wish to implement Critical Environmental Areas (CEA) where the density of development would be further restricted based upon subwatersheds that have load reduction goals.

It is clear that any of the proposed solutions to our water quality remediation efforts will require a long-term, sustainable funding source. Homeowners in lower income areas cannot be expected to undertake these additional costs without financial assistance. Federal and State funding along with grants are needed to implement many of the Plan's recommendations. Additional funding is also needed to research more cost efficient and effective means of sewage treatment.

Through our Sewer District, a comprehensive evaluation of its priority areas it serves is underway. The sharing of information between the Town of Riverhead and Suffolk County is essential to ensure efficient and effective implementation of our water quality goals. We will also be using the SWP and our efforts to update our Comprehensive Plan to implement water quality improvement strategies.

Additional comments regarding the draft SWP will provided prior to the September 16, 2019 comment deadline. We look forward to working with the County on addressing this critical issue. Please contact me should you have any questions.

Sincerely,

Jeff V Murphree

Jefferson V. Murphree, AICP
Building & Planning Administrator

cc: Laura Jens-Smith, Supervisor
Town Board
Stan Carey, Planning Board Chairman
Planning Board
Robert Kozakiewicz, Town Attorney
Michael Reichel, Riverhead Sewer District Superintendent
Frank Mancini, Riverhead Water District Superintendent

TOWN OF RIVERHEAD 39a
PLANNING DEPARTMENT

201 HOWELL AVENUE, RIVERHEAD, NEW YORK 11901-2596
(631) 727-3200, FAX (631) 727-9101

Jefferson V. Murphree, AICP	John F. Flood, Jr.	Karin Gluth	Greg Bergman	Carissa Collins
Town Building and Planning Administrator	*Environmental Planner*	*Planner*	*Planning Aide*	*Planning Board & Zoning Board Secretary*
Ext. 239	*Ext. 207*	*Ext. 206*	*Ext. 264*	*Ext. 240*

September 16, 2019

Ken Zegel, PE
Associate Public Health Engineer
Suffolk County Department of Health Services Office of Ecology
360 Yaphank Avenue, Suite 2B
Yaphank, NY
11980

Re: Suffolk County Wastewater Plan

Dear Mr. Zegel:

The Town of Riverhead applauds Suffolk County Department of Health Services (SCDHS) for its efforts to reduce the decades-long impairment of our groundwater and surface water bodies. Clean, inexpensive and easily accessible water is essential not only to County residents and businesses, but also our natural environment. This endeavor will take a long-term comprehensive approach that requires a strong commitment by our elected and appointed officials to implement. Just as important, this effort will require residents to acknowledge that we all have a part in the solution.

The Draft Subwatersheds Wastewater Plan (SWP) relies heavily on Innovative/Alternative wastewater treatment systems (I/A OWTS) for a large part of water treatment and the removal of excess nitrogen levels in our surface and groundwater. However, we don't know the long-term failure and malfunction rate of much of these systems. Might this raise the long-term cost? For example, were staffing, nitrogen testing, and maintenance of systems addressed in the SWP? To convert 819 private residential wells (Households) in Riverhead to I/A OWTS, the total cost to install these systems is $17.31 million. The study indicates use of I/A OWTS systems is the most cost effective means of treatment, but perhaps we should be looking to actually sewer additional areas instead. a b

The study indicates sewering may be more beneficial in areas in proximity to existing sewered areas. However, the study does not appear to propose an expansion of the Riverhead Sewer Plant. This sewage treatment facility is an example of how successful these types of systems can be. Nearly a quarter of the Peconic Estuary subwatersheds were ranked Priority 1. The western part of the Peconic Estuary is identified as a high priority ranking area (more densely developed and less well flushed). The cost of I/A OWTS approaches the cost for sewering at near shore areas with small parcel sizes (.25 acres

or less) and high groundwater. South Jamesport has small parcel sizes and it is assumed high groundwater. However, this area appears to be considered for I/A OWTS upgrades and not sewering.

Sewage treatment plants are an excellent means to reduce nitrogen and other pollutants into our surface and groundwater. The Town of Riverhead sewage treatment facility accepts waste by pipeline from properties within the Riverhead Sewer District and by truckload from properties in the towns of Riverhead and the South Fork that are served by private septic systems. As a result of the upgrade, it can treat up to 1.5 million gallons of wastewater per day to the technological limit of under 4 milligrams of nitrogen per liter. Using membrane technology and high-dose ultraviolet disinfection, the plant treats for a host of other pathogens as well, including viruses.

Using some of the effluent for irrigation reduces nitrogen-loading in the Peconic Estuary by 1.4 tons per year. Nitrogen pollution contributes to harmful algal blooms and increases aquatic plant growth in water bodies, which in turn consume too much oxygen that can deplete oxygen to levels that cannot support marine life, resulting in massive fish kills like the ones seen in the Peconic in 2015. The upgrade and reuse project was completed in 2016 with financial assistance from federal, state and county governments. Additional funding for Riverhead
c sewage treatment facility would provide a cost effective means to achieve many of the goals identified in the Wastewater Plan.

The study indicates the preservation of open space can be the most cost effective approach to protect source water quality. Based on County recommendations, municipalities may wish to implement Critical Environmental Areas (CEA) where the density of development would be further restricted based upon subwatersheds that have load reduction goals. A continuous source of County funding is needed
d for the purchase and preservation of properties that are located within CEAs.

We look forward to working with the County on addressing this critical issue. Additional comments and questions are attached. Please contact me should you have any questions.

Sincerely,

Jefferson V. Murphree, AICP
Building & Planning Administrator

cc: Laura Jens-Smith, Supervisor
Town Board
Stan Carey, Planning Board Chairman
Planning Board
Robert Kozakiewicz, Town Attorney
Michael Reichel, Riverhead Sewer District Superintendent
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TOWN OF RIVERHEAD
PLANNING DEPARTMENT

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Town Building and Planning Administrator	*Environmental Planner*	*Planner*	*Planning Aide*	*Planning Board & Zoning Board Secretary*
Ext. 239	*Ext. 207*	*Ext. 206*	*Ext. 264*	*Ext. 240*

Suffolk County Subwatershed Wastewater Plan
Comments and Questions
September 16, 2019

1. Although not located within a County-defined priority area, the Town of Riverhead has numerous older developments existing in the headwaters that feed into them. For example, the Town of Riverhead has many mobile home parks that are not connected to a sanitary wastewater treatment system. Many of these mobile home parks are home to lower income residents. Given their age, many of these developments predate Article 6 of the Suffolk County Code and their high density makes them prime candidates for sewering. Given their high density, this should be the most cost effective means to treat a significant amount of effluent. A County funding program should be considered to extend the Riverhead Sewer District into these areas. b (cont.)

2. It is recommended that the priority areas be extended into the headwaters of the Peconic River and the Peconic Bay. d

3. It is recommended that a continuous funding source be budgeted to examine new wastewater treatment technologies. e

4. Will towns and villages be required to perform periodic inspections to determine whether an IA/OWTS is operating up to County Standards? f

5. The IA/OWTS is a mechanical system that relies on a constant source of electricity to operate them. Mechanical systems fail over time. Many residents within priority areas are lower income wage earners. How will residents in lower income areas pay for the continuous maintenance costs of these systems? g

6. The annual and long-term monitoring is essential to determine whether the Nitrogen reduction levels are being achieved. The various alternative wastewater systems are only as good as their h

ongoing maintenance. The County needs to have the funding and staff levels to perform these duties.

i 7. Has the County investigated the long term groundwater test results of the IA/OWTS from other municipalities, such as those in Jamestown, Rhode Island, to see how well these existing systems are performing and whether they achieving identified water quality goals?

j 8. In the Executive Summary, Riverside in the Town of Southampton is listed in a table with Sewer Scenarios under projects that can be completed with an asterisk. However, no note is provided regarding what the asterisk means.

TOWN OF SOUTHAMPTON

Department of Land Management
Long Range Planning Division
116 HAMPTON ROAD
SOUTHAMPTON, NY 11968

Phone: (631) 287-5707
Fax: (631) 287-0262

JAY SCHNEIDERMAN
TOWN SUPERVISOR

KYLE P. COLLINS, AICP
TOWN PLANNING AND
DEVELOPMENT ADMINISTRATOR

September 16, 2019

Suffolk County Department of Health Services
360 Yaphank Avenue, Suite 2B
Yaphank, NY 11980

Attn: Kenneth Zegel, P.E.
Associate Public Health Engineer
SCDHS Office of Ecology

Re: SEQRA DEIS Comments for Suffolk County Subwatersheds Wastewater Plan

Dear Mr. Zegel:

Thank you for the opportunity to comment on the County's Subwatershed Wastewater Plan (SWP) and corresponding Draft Environmental Impact Statement (DEIS). As you know, Southampton Town is committed to preserving and protecting our ground and surface water quality and we fully support the partnership and efforts of the County in this regard.

The Town has been intimately involved in water quality initiatives funded through our Community Preservation Fund, including the most recent I/A system rebate program as well as an array of Long Range planning objectives and zoning initiatives supported by our Comprehensive Plan that channels growth to our hamlet centers, preserves farmland, wetlands and coastal habitats, the Central Pine Barrens and our overall quality of life in Southampton which relies heavily upon the second home and tourist industry as economic drivers of the Town.

Below please find comments on some specifics of the Plan and recommendations for implementation that are outlined in the DEIS for you to clarify in the Final EIS process.

1. Related to 'Recommendations for Upzoning' (Section 8.4.7) We would like access to the 'full build out parcel data set' that was utilized in the analysis for the Town of Southampton in order for us to evaluate the assumptions and conclusions that support the recommendation to effectively upzone all parcels within GMZ IV from the current ½ acre density to 1 acre. Did the County take into consideration the amount of preserved lands within these areas of the Town? Did the Town's mandatory use of I/A systems for new construction or the funding for upgrading a

systems get factored into the amount of nitrogen reduction projected by this change?

2. The following comments are related to the initial recommendations for Transfer of Development Rights found in Section 8.4.10:

   a. The Plan clearly states that a detailed Transfer of Development Rights Plan was not in the scope of the SWP, yet fairly significant recommendations are included and also provided in Table 8-25. Although presented as initial options to consider that are 'non-binding', the concern is that the SWP and DEIS will end up being pointed to as the supporting basis for TDR policy changes without the separate and significant amount of public and agency scrutiny and input that would be required understand the impacts to our long term farmland preservation and development objectives. We would like the County to specifically add a footnote to Table 8-25 of recommendations that again indicates these actions will require a separate SEQRA analysis prior to the enactment of any policies that ultimately affect future land use and the use of TDRs within the Town of Southampton.

b

   b. There is further concern about the TDR recommendations and the coordination of the 'review principles' for authorizing TDR programs, particularly with the implementation of the Central Pine Barrens Comprehensive Land Use Plan (CLUP). A critical component of the success of the CPB legislation was the incorporation of the provision to be able to transfer development rights through the creation of Pine Barrens Credit Program. Article 57 of the ECL states that *"the legislature intends that a comprehensive regional land use plan be implemented whereby private landowners whose property is located within the Central Pine Barrens area are afforded an opportunity to receive benefits from the plan such as* ***transferable development rights****, conservation easements, rights and values transfers, purchase of development rights and/or fee acquisition with monetary compensation."* It is not clear in the SWP that Pine Barrens Credits (PBC's) are being fully considered in the TDR recommendations; especially in their use as sewage credits. The CLUP mandates that the Towns maintain certain sending to receiving ratios with reference to the use of PBC. Specifically, section 6.5.2.1 states that *"Each town shall include enough absorption capacity in receiving districts that meet the as of right definition set forth in Section 6.4 of this Plan so as to absorb all of the Pine Barrens Credits on a one to one (1:1) ratio that the Commission estimates it may allocate in that town pursuant to this Plan.* This section further recognizes that any change in municipal regulations *that would decrease the receiving capacity so as to reduce this ratio below 1:1 would have an adverse effect on the Pine Barrens Credit program.* Further, the CLUP also acknowledges, in section 6.4.5, amendments to Article 6 of the Suffolk County Sanitary Code *to facilitate implementation of each town's Pine Barrens Credit program in accordance with this Plan.* It is critical to the integrity of the Pine Barrens

Plan to be able to transfer development rights from the Core to receiving areas in all parts of the Town. Therefore, it is of the utmost importance that any changes in the Article 6 of the Suffolk County Sanitary Code with reference to transferring development rights take into consideration any potential impacts on the PBC program and the requirements of the CLUP. c

c. In light of the above, we would like to more fully understand what the criteria for "sensitive zones" will be and how the recommendation to not allow any transfer into Priority Areas 1 and 2 will specifically affect future development within the Town of Southampton. The SEQRA analysis is insufficient in this regard. How will the dynamics of nitrogen load capacity be evaluated over time? Will it be the responsibility of the Town to maintain this type of monitoring in order to transfer credits? While we agree that we should not despoil or overburden any waterbody beyond its capacity to assimilate nitrogen, the recommendation appears to be punitive. We expect to fully participate in any decision making process that affects development rights within the Town of Southampton. d

3. We think that establishing a Countywide Wastewater Management District is a good idea but think an initial financial model should be included in the analysis. Also, what are the implications for having to create individual Sewer Districts pursuant to Town Law Article 12? e

On behalf of the Town, I would like to again express our support for the Subwatershed Wastewater Plan and look forward to working in partnership with the County on these critical issues.

Sincerely,

Kyle P. Collins, AICP
Town Planning & Development Administrator

From:
Sent: Tuesday, September 17, 2019 4:03 PM
To:
Subject: FW: Correction for last sentence in ¶4

From: Karen Blumer [mailto:growingwild@icloud.com]
Sent: Monday, September 16, 2019 5:02 PM
To: Zegel, Ken <Ken.Zegel@suffolkcountyny.gov>
Cc: Scully, Peter <Peter.Scully@suffolkcountyny.gov>; Dale, Dorian <Dorian.Dale@suffolkcountyny.gov>; Krupski, Al <Al.Krupski@suffolkcountyny.gov>
Subject: Correction for last sentence in ¶4

ATTENTION: This email came from an external source. Do not open attachments or click on links from unknown senders or unexpected emails.

Mr. Zegel:

Corrected letter for the record, for 4th ¶ to read (please submit for the record, letter below to replace the original. Thanks):

We encourage the County to heed our comments on the inadequacy of public notice, extend the time period for comments, and use whatever public information pathways are currently available, such as those being establshed by WFLI, NYS DEC, the LI Clean Water Partnership, LICAP and the SCWA, to educate and inform the public. The dismal participation by the public on the growing need for management of its critical resource —water, as evidenced by poor attendance in the County's hearings alone, should be noted.

Open Space Council

PO Box 275 • Brookhaven, NY 11719

September 16, 2019

Mr. Ken Zegel
Suffolk County of Department of Health Services
360 Yaphank Ave
Suite 2B
Yaphank, NY 11980
Ken.zegel@suffolkcountyny.gov

Re: Suffolk County's Subwatershed Plan

cc: Peter Scuffy; Dorian Dale; SC legislators

Dear Mr. Zegel:

Open Space Council has submitted comments elsewhere on the County's Subwatershed Wastewater Plan, joining with others collectively as Water for Long Island (WFLI), a coalition of groundwater experts and organizations working to protect Long Island's groundwater. Here we would simply like to highlight some of the comments we most strongly support.

We support and congratulate the County for taking a watershed approach to water management, albeit, here as the Plan, we note that it is for surface water only. We encourage the development of gradual improvements over time in this approach. Surface and groundwater cannot be separated —hydrologically, ecologically, or legally. For the county to continue to do so is counterproductive to accomplishing the type of water management that is needed.

a As to the delineation of subwatersheds, we encourage the County to expand the capacity and size of the subwatersheds to their true inclusion as groundwater watersheds, from point of entry to point of discharge. To focus simply on surface water subwatersheds is not a sound basis for management.

b We encourage the County to heed our comments on the inadequacy of public notice, extend the time period for comments, and use whatever public information pathways are currently available, such as those being establshed by WFLI, NYS DEC, the LI Clean Water Partnership, LICAP and the SCWA, to educate and inform the public. The dismal participation by the public on the growing need for management of its critical resource —water, as evidenced by poor attendance in the County's hearings alone, should be noted.

c The County's emphasis on nitrogen as a problem, resulting in what some consider "the Myth of Nitrogen," to the exclusion of the many accompanying and equal, or greater, problems of concern, such as emerging toxic and carcinogenic contaminants, we feel needs serious re-consideration. Further, the extreme overwithdrawal of groundwater and its ramifications resulting from mismanaged sewering, while the County simultaneously promotes sewering that discharges to the ocean rather than receiving proper treatment and recharging to the aquifer, is not only of concern but does not bode well for successful subwatershed management.

d We emphasize here that the funding for making efficient new systems available to the public is not equitable. Nor is the process used by the County to select the systems that are approved for availability to the public, by offering only those systems provided freely by its manufacturers. A greater expansion of both efficient and protective systems must be made available to present to the public. To continue to tout systems that barely achieve a 19 ppm nitrogen standard, exceeding the legal limit, just because they are an improvement over 50 ppm, is self-defeating and does not bode well for the future of our waters. Options for use must include closed systems, such as the compost toilet — commercial and residential size, and innovative, simple polishing beds

e recommended, for example, by Dr. Chris Gobler and Southampton research, to reduce nitrogen to 0 to 2 ppm and promote total removal of VOCs and other toxic substances.

f In general, we support and encourage the County's work to improve nitrogen and other substance treatment and removal, with the accompanying caveats: 1) as long as an equitable funding system can be developed; 2) a maintenance program outside the control of property owners is implemented; and 3) a greater option for effective alternative systems is made available to the public, to include closed systems, such as those routinely permitted in other parts of New York State, Rhode Island, and Massachusetts, and efficient systems that go beyond simply those donated freely by manufacturers.

Thank you for this opportunity to comment.

Karen Blumer

Karen Blumer
President, Open Space Council
Administrator, Carmans River Watershed Trust Fund
Member, Water for Long Island and LI Clean Water Partnership
PO Box 142 • Shoreham, NY 11786
631-821-3337 • growingwild@iCloud.com

Molloy College

1000 Hempstead Ave., PO Box 5002, Rockville Centre, NY 11571-5002
www.molloy.edu

Edward J. Thompson, J.D.
Vice President for Advancement
T: 516.323.4601

December 5, 2019

Peter A. Scully
Deputy County Executive for Administration
100 Veterans Memorial Hwy
P.O. Box 6100
Hauppauge, NY 11788

Dear Peter,

I very much appreciated our conversation of yesterday and your recent correspondence to Molloy College regarding some issues of concern to you and Suffolk County. I am grateful for this opportunity to respond and, hopefully, to address the matter in question.

Like any university, an important part of the mission of Molloy College is the production and dissemination of knowledge. Our faculty stand at the center of that effort, be it through their own research or through centers like CERCOM which aims to conduct field monitoring and research on coastal Long Island, with the ultimate goal of educating the public about the environmental issues we face as a community.

While we fully support those efforts and the tenets of academic freedom which undergird it, at no time do we condone faculty using the College's resources to promote personal views in matters pertaining to public policy. Nor do the personal views and advocacy of our faculty represent the views of the College and the Board of Trustees. A bright red line stands – and must stand – between them.

Regrettably, Dr. Tanacredi blurred those lines with his actions in the recent matter. In no way do his views on the Subwatersheds Wastewater Plan represent the views of the College. Further, we have taken steps to ensure that the College's resources are not directed in any way other than to educate the public and provide important information to policy makers.

Dr. Tanacredi has been instructed in these matters. We apologize for any misunderstanding and misrepresentation of the true mission and goals of Molloy College.

Sincerely,

Edward J. Thompson J.D.

Vice President for Advancement

From:
Sent: Tuesday, September 17, 2019 4:10 PM
To:
Subject: FW: Draft EIS Watershed Review 2019
Attachments: SWP DGEIS Draft Comments 9-04-19L.pdf; SWP A Guide (handout) to Comments in the SWP review Phase 1.pdf; 19-03-10 Suffolk County Sewer Policy Report.pdf; Subwatersheds Wastewater Plan 8 29 2019 Final .docx

---

From: Zegel, Ken
Sent: Monday, September 16, 2019 5:57 PM
To: Caniano, Anthony
Subject: FW: Draft EIS Watershed Review 2019

From: Adrienne Esposito [mailto:aesposito@citizenscampaign.org]
Sent: Monday, September 16, 2019 2:57 PM
To: 'Kevin G. McDonald' <kmcdonald@tnc.org>; 'Bob Deluca' <bdeluca@eastendenvironment.org>; 'Katie Muether Brown' <kmbrown@pinebarrens.org>; 'Christopher Gobler' <christopher.gobler@stonybrook.edu>; 'Nicholas Calderon' <n.b.calderon@tnc.org>; mmurphy@citizenscampaign.org; 'Jordan Christensen' <jchristensen@citizenscampaign.org>; Scully, Peter <Peter.Scully@suffolkcountyny.gov>; Lansdale, Sarah <Sarah.Lansdale@suffolkcountyny.gov>; Dale, Dorian <Dorian.Dale@suffolkcountyny.gov>; Zegel, Ken <Ken.Zegel@suffolkcountyny.gov>; Jobin, Justin <Justin.Jobin@suffolkcountyny.gov>
Subject: FW: Draft EIS Watershed Review 2019

From: John Tanacredi [mailto:jtanacredi@molloy.edu]
Sent: Monday, September 16, 2019 2:43 PM
To: aesposito@citizenscampaign.org
Subject: Draft EIS Watershed Review 2019

Considerable attention over the last 10 years has been directed at the improvement of water quality in groundwater/drinking water and coastal estuarine surface waters of Suffolk County. The recently released Draft Suffolk County Sub-watershed Wastewater Plan and Draft EIS, have presented a 50 year plan, proposed to cost over $4 billion dollars over this time frame, directed mostly at the reduction of a misdirected nitrogen loading myth.

The enclosed review of this draft plan is provided in conjunction with respected professional engineers and environmental scientists, as an environmental scientist with over 47 years of government, academic and practical environmental engineering experiences in ecology and environmental science. It is hopeful that this critique will be reviewed and considered in the total reshaping of this unfortunately inflated, over stated, inaccurate proposed plan regarding water quality management in Suffolk County. I am not a consultant. I have no vested interest in this process except that I am a homeowner in Suffolk County and I am an academician who has partaken in a considerable number of environmental planning activities over the last two decades. (I presently sit on the TAC of the SSER Planning Group of the NYSDOS). I believe that the blame of conceived nitrogen pollution on septic

systems is unfounded, thus as a professional environmental engineer and Professor of Earth and Environmental Sciences, I had to provide this information to you.

Should you feel it necessary to discuss this further or would care to visit CERCOM to review the simple evaluation that present themselves to the required dramatic improvement of this plan, please feel free to do so at your convenience. At a minimum I believe these comments must be made part of the SEQRA process in NYS as this is a plan that will have significant impacts on environmental quality for Long Island.

John T. Tanacredi, Ph.D.
jtanacredi@molloy.edu
Molloy College
Professor of Earth & Environmental Studies
Executive Director of CERCOM (Center for Environmental Research & Coastal Oceans Monitoring)
CERCOM: 516.323.3591 | Main Campus: 516.323.3415 Kellenberg 101D
Cell: 516.509.7991 | F: 631.319.6195
https://works.bepress.com/john-tanacredi/
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http://www.instagram.com/molloycollegecercom/
www.molloy.edu/cercom

August 29, 2019

To: All Interested Parties/Files

From: Dr. John T. Tanacredi, Professor Earth and Environmental Studies / Director CERCOM (Center for Environmental Research and Coastal Oceans Monitoring)

Comments on the Draft Subwatersheds Wastewater Plan (June 2019) A Short Critique of the Executive Summary Document

The basic assumption made in this report/plan are unsubstantiated by actual nitrogen loading data. The plans approximation of 74 percent of un-sewered homes discharge wastewater containing elevated nitrogen levels to the underlying sole source aquifer, and that the major effect of nitrogen reaching Suffolk County's surface water body's originates from onsite sanitary systems (traditional septic systems) that "are not designed to remove nitrogen," is an assumption so far from actual conditions and treatment effectiveness of properly maintained septic system that it borders on the level of mysticism! a

The LI NAP developed a plan in order to concur with Nassau and Suffolk County as they divided into Sub-watershed Waste water Plans (SWPs) "to protect the sole source aquifer" admits that "wastewater management alone may not result in sufficient nitrogen removal to protect the environment and human health, and where additional nitrogen mitigation may be required".

The summery notes another falsity that OSDS systems (Septic) "provide primary treatment for the removal of BOD through settling within a septic tank followed by septic tank effluent through a leaching pool." BOD is mainly determined by carbonaceous wastes and the nitrogenous wastes are treated in the soils by nitrogenous bacteria that are mostly anaerobic. The 10 mg/L of nitrogen has not been recorded in aquifers, in drinking water well data or even on a continuous basis in drainage basin stream surface waters to any level considered a "crisis". In addition Figure 1 Summary of Documented 'Water Quality Improvements in 2017 is totally misleading and grossly exaggerated even for a decade long data set. Periodic blooms are "normal" and even those Rust or Brown Tide incidents are ephemeral and have little, if any human health impacts. Even trace ecological health implications are motivated by scientifically untrained, NGO environmental groups that have promoted the pre-conceived agendas that have been scientifically unsound for decades, and have been defiant of a free exchange of alternative opinions, data review and non-politically motivated perspectives. b c

This summary notes that the "USEPA recommends surface water nitrogen concentrations of 0.45 mg/L for the protection of dissolved oxygen…" After 19 years of recording top and bottom water column dissolved oxygen values (DO) for 9 sites within Great South Bay, DO levels at all sites at top and bottom samples, have exhibited a robust DO average of 7.0 mg/L. Nitrogen has had no impact on the Great South Bay waters and there is no substantiated data supporting that 390,000 homeowners and their septic systems have impacted the dissolved oxygen levels in coastal waters of Suffolk County. d

Program Benefits Review states that Brown tides "have devastated areas of New York coastal waters, threatening important habitat", "disrupting food chains for many marine species and impacting economically viable fisheries." Which fisheries? Where on Long Island (NY)? When? For how long? What was the economic impact? What was the "disrupting food chains" examples? What have been the e

"devastated areas"? Nothing was clearly defined that prompts the extensively expansive plan being proposed.

Blooms of *Alexandrium* spp (saxitoxn) should have the NYSDEC frequency of beach closures noted as well as what the economic impact is associated with the blooms? How many closures have occurred as "Temporary Shellfish Closures"? As of July 27, 2019 – NO CLOSURES in effect? Uncertified areas, are just that!! "Uncertified" "Seasonally certified" are linked to summer precipitation events! Shellfish closures after "perception events" and an annual event due to urban runoff. Last decade has shown more
f precipitation on Long Island thus more atmospheric contributions. Little attention to atmospheric influences to nitrogen levels is presented.

1.3 Innovative /Alternative Onside WTS (E-12 t/0 15)

This entire section would not be necessary if the County provided the 390,000 homeowners the economic incentive (tax relief or a rebate upon selling home, etc.) to maintain their own septic systems. Give a true economic relief to homeowners by giving a tax exemption for having their septic system pumped out. This would be an incredibly positive gesture for the homeowner as no septic system (and especially one that has moving parts as shown on page ES-11) will ever remove 100% of nitrogen. Keeping the soil of the leach field healthy and bolstering the microflora of the septic tank to do their job, would be a conservation effort of little cost and certainly wouldn't need to "maintain" the IA septic system. The IA septic demonstrations have all been less effective than the standard septic systems
g presently existing in the 390,000 households identified in this Draft plan.

Existing sewage treatment facilities should be upgraded to secondary treatment at a minimum (i.e. activated sludge systems reduce Nitrogen!) The report constantly uses the 10 ppm (mg/L) as required by the SPDES permits and this is what the STP's should be able to attain. No indication that septic systems
h discharge anywhere near this value. All estimates of nitrogen contributions from septic systems are inflated.

i The County's Report relied only on a limited number of specialists input into this planning process. Stakeholder involvement was limited to select NGO's or agencies. SEQRA processes were not integrated into this long-term proposal.

Page ES-16 Section 2.4 Groundwater Modeling

Figure 7 shows the land surface are a contributing groundwater base flow to surface waters. The considerable time for recharging precipitation, taking in the Carmen's river surface water system, over a century to discharge to base flow, providing the basis for the estimated nitrogen loading to the surface waters. If these model exercises (200 – year simulation period) are independent of developmental
j patterns in each of these drainage areas for the relevant surface water, the nitrogen loading would vary considerably over this expansive time period. The 50 year groundwater contributing area was used to characterize nitrogen loading for the 5 west end towns. Depending on the 50 year previous development rate and anticipated "projected future build-out conditions", nitrogen loadings would be overestimated and the identified recommended wastewater alternatives, if implemented, would spur on sprawl development scenarios.

Section 2.5.1 (pg. ES-24) identifies nitrogen introduced to the aquifer system as the "most significant component of nitrogen load" from on-site sanitary systems. This per-capita nitrogen load was assigned

an average of 10 lbs. / nitrogen per person per year and that "six percent removal of nitrogen in septic tank (consistent with Valiela (1977), Lyod(216), Vandrey(21016) and Stinnette (2014)". All these projected removal percentage models did not include individual septic system routine maintenance with accumulated sludge removal and populations of homeowners associated with individual septic units. Septic systems, with all things being equal and with an active annual maintenance regimen, fostered by an appropriate education to communicate to homeowners about the effectiveness and benefit of individual property owner wastewater treatment, would provide for and average amount of 75 - 85% reduction of nitrate effluent concentrations through personal maintenance of a healthy soil denitrification process! (USEPA, "Septic Systems and Ground-Water Protection An Executive's Guide, " (1986) k

Section 2.6 Existing Conditions Nitrogen Load Estimates:

"Groundwater Models" and "the simulated results provided the estimated nitrogen concentration throughout the aquifer system, the estimated nitrogen loads to each sub- watershed and the estimated concentration of nitrogen in supply wells. " The report noted that these estimates were "a reasonable representation of observed concentrations and no systematic bias was observed across the datasets." How was this established or determined? In addition the report identifies that Nitrogen is not a concern (77% of community supply wells to be less than 4 mg/L) in the source water community supply wells in Suffolk County! (pg. ES- 27) l

Section 2.7.2 Surface Water Modeling and Residence Time Calculation:

Figure 16 shows " the parameters that were included in the database organized for this project and the number of samples provided by each data source" These parameter are not all equal contributors to the environmental impact to water quality and/or health of the estuarine systems monitored. For example DO values would be a primary determining factor in the health of coastal estuaries and the total diversity of phytoplankton/algae inventory would have an associated relationship especially if nitrogen is the target nutrient. m

Section 2.8.6 though Section 2.10

Nitrogen load reductions efforts for marine and estuarine waters to meet an "ecological endpoint" were noted in these sections. The most important factor however, which is never discussed or addressed by any ecosystem based management methodology. What are these ecologic endpoints? What estuarine water quality conditions are to be the end goal especially since this water quality plan anticipated spending $4 billion over 50 years, so it should have at a minimum the anticipated, detailed benefits of this mega project, should it proceed. The entire section avoids any discussion nor identifies what quality level Long Island's (Suffolk County) coastal ecology will be attained. n

Section 3.0 Evaluation of Wastewater Management Methods

A true cost-benefit analysis if it were even to be done on septic system effectiveness, efficiency and lowest of all cost for wastewater treatment, would reveal it to be the lowest cost approach to controlling (no system will ever totally remove nitrogen from wastewaters) nitrogen while not being an economic burden on the homeowner specifically. o

p

All pilot areas have not revealed the new innovative systems to be any more, and probably considerably less effective in nitrogen-reduction, than a standard septic system. In addition, existing septic systems were not analyzed for their existing costs/# of nitrogen removed. To suggest the use of I/A systems will be "mandated upgrades" if the old system fails, is counter to all property rights and conservation ethics, and is a gross miscarriage of legislative mandates involving water quality. (Pages ES 55-66)

Section 3.5.1 Inventory of Exiting Sewer Proposals in Suffolk County

q

Incorporated in this draft plan to "identify 21 County led sewering proposals and 15 town/village led sewering proposals that have been evaluated over the past two decades," is nothing more than a effort to justify the replacement of all residential neighborhoods that have existing septic systems to treat household waste water with "I/A systems" that are generally untested, no more effective that standard traditional septic systems , and are systems with moving parts, making them more vulnerable to breakdowns and costly maintenance or repair. (Pages ES 69 –ES76)

r

The draft SWP identifies "that all OSDS (old septic systems) would benefit from upgrade (replacement) to I/A OWTS systems but that some parcels may benefit more from sewering." This statement eliminates any homeowner's maintenance practices of individual septic systems with two overly costly alternatives.

Section 4.1 (pg. Es-76 - end) Predicted Benefit of SWP implementation on Surface waters.

s

All Figures 1, 36 and 37 are "simulated models" based on 10 mg/L providing a false justification for the wholesale replacement of septic systems with I/A OWTS "advanced systems". Model predications are basically "crap shoots" of future, real world healthy, ecologically robust and productive "coastal ecosystems". Reduce the threshold values in these models for nitrogen from septic systems, or improve existing systems by household stakeholders maintenance, and the nitrogen problem will almost totally disappear. Models do not equal evidence! Monitoring sewered treatment systems by NYSPDES permitting would always be necessary and required.

Section 5.1 Privacy Program Recommendations _ (pg. ES82-85)

Noted as "Phase I Ramp up", there should be No amendment to Article 6 of the Suffolk County Sanitary Code that "requires the installation of IA OWTS for all new construction!

t

In addition, replacement and/or upgrading of existing septic systems should be "in-kind" not imposing any additional costs to homeowners even if all existing systems fail or request to be upgraded. Maintained properly, septic systems will last forever.

Attachment 'a' to #42
(Already included as #18)

A Review of the Draft Generic Environmental Impact Statement for the Suffolk County Subwatersheds Wastewater Plan

Suffolk County Wastewater Management Program for the Reduction of Nitrogen Loading from Wastewater Sources

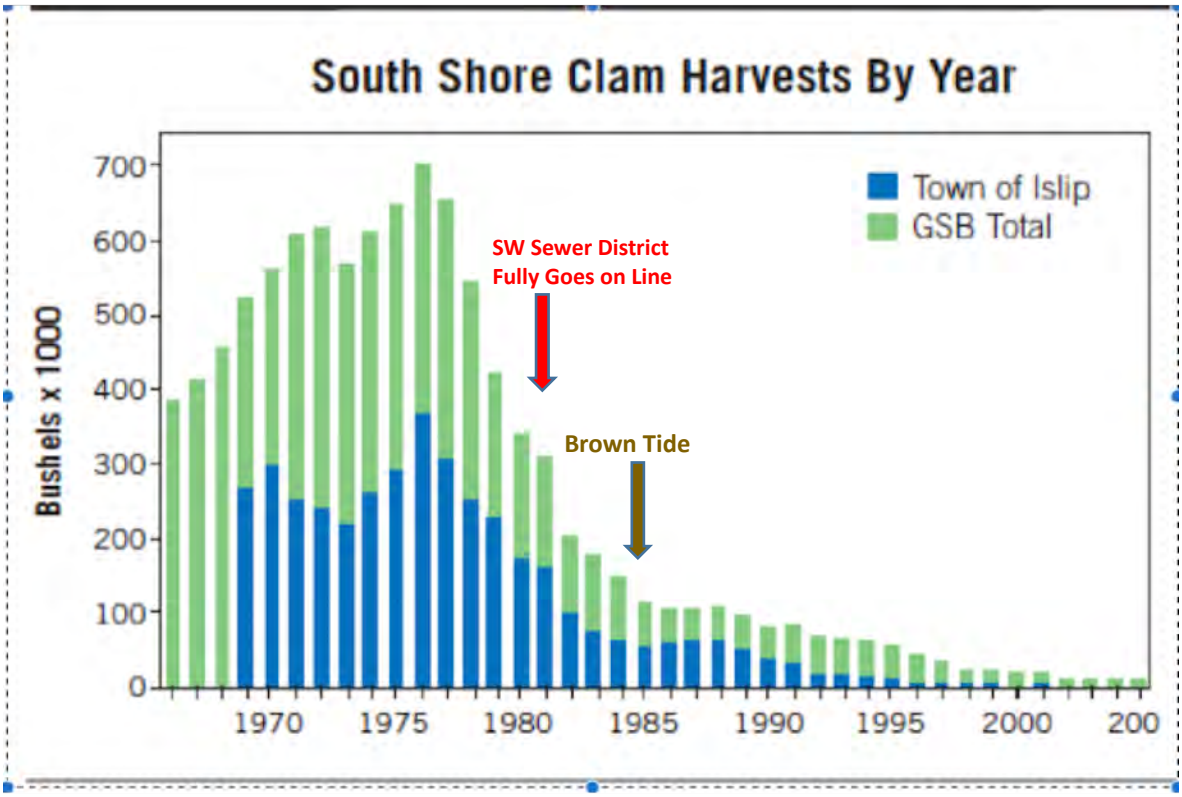
Prepared: September 4, 2019

Phase 1 -Comments

*"If **septic systems** are causing harmful algae blooms and killing clams and killing fish –then why after 35 years hasn't their elimination and sewering solved the problem?"*

*"We should not attempt to control harmful algae by **starving the bay of nutrients**."*

*"Further reducing the nitrogen loading to our bay will **decrease** shellfish populations and **increase** the potential for harmful algae blooms."*



SWP Review Group:

Peter Akras PE, MSPH

Stephen Costa PE

Jack Mattice PHD

Robert Nuzzi PHD

Royal Reynolds PE

John T. Tanacredi PHD

Roger C. Tollefsen B.Ch.E.

Martin Trent

Electronic Copy available at: http://tiny.cc/SWPreview

Contact Persons:

Concerning Wastewater Management (sewage disposal)
Royal Reynolds
rrvreynolds@optonline.net
631 885-1926

Concerning Impact on estuaries (HABs, Shellfish, etc.)
Roger Tollefsen
nyseafood@msn.com
631 740-0381

About the Group: Each member has brought their own area of expertise and experience to this review. A function of the Team has been to listen, challenge and critique each other, in order to assure a balanced perspective.
The SWP in some instances has stated its conclusions as absolutes while there are clearly uncertainties. Contrary to the conclusions drawn by the SWP and DGEIS, the data and the literature suggest that many of the SWP recommended actions may indeed have negative effects.
The SWP Review Group recognizes the complexity of systems but uses definitive language to encourage the reader to explore the alternative perspectives suggested by research and data.

General Dissent of the SWP:

During the course of preparation of the SWP, individuals have offered information that is counter to the pre-conceived notion that nitrogen is the number one villain of our bays. In response, it was pointed out in several organizational meetings that these individuals must be wrong. The ground swell of organizational support for the SWP is based on the belief that it will protect our drinking water, eliminate HABs and return our bays to some previous, undefined level of productivity. Those who support the SWP have assumed that it will be the vehicle to achieve these goals; however, the SWP does not state or demonstrate that it will.

In Memory:

During the course of the last year we lost three of our colleagues, who had a tremendous impact in the field of Public Health and Wastewater Treatment. They are Robert Villa, Aldo Andreoli and Steve Costa; God bless.

Introduction

On March 10th of this year we completed a review of the sewage disposal practices in Suffolk County, which had been undertaken several years ago. We evaluated the sewage disposal practices in Suffolk County and presented a report with recommendations to County officials with a long range strategy and plan for sewage disposal. [Policy Report] This report coupled with two other reports we did [Eastern Bays Review & LICAP Report Review] served as primary references for this review of the DGEIS and the Subwatershed Wastewater Plan; and they are linked in our written comments. It is recommended that the reader familiarize him or herself with these documents.

With only about a month to review and prepare comments on the 800 pages of the SWP, 500 pages of the DGEIS and the 1500 pages of supporting documents, we were restricted by time and had to center our focus on the DGEIS at hand and the SWP as it related to the DGEIS. Finalization of this report and comments is pending the results of the public hearings.

Summary

Based upon this review we found the DGEIS and SWP to be deficient on several levels. As a group of scientists, engineers and public health experts, what we found most puzzling was the focus on nitrogen as being the trigger for all the ills of the groundwater supply and estuaries. The portrayal of nitrogen being on the rise and needing "remediation" appears to be a common theme and pattern throughout the SWP and DGEIS.

According to the DGEIS and SWP nitrogen is the cause of fish kills, the decline of clam populations and harmful algae blooms; and has it affected the health of Suffolk County residents. When we reviewed the SWP and other references, we found no cause and effect to these claims. Instead of proving cause and effect, the DGEIS and SWP inferred and implied connections with nitrogen, misinterpreting data, failing to consider information supporting alternative causal hypotheses and using computer programs (models) to bolster the flawed hypothesis. The most outstanding flaw of the SWP was its changing of the assumptions used to simulate and predict wastewater nitrogen loading to the groundwater and bays. Assumptions were specifically changed in the SWP; more than doubling the predicted nitrogen loading from previous reports (by the same consultants). **This incorrectly skewed the results and conclusions.** In addition, data was manipulated for the SWP to depict rising nitrogen levels throughout the estuaries, while other analyses (including ours) indicted that the nitrogen concentrations were actually on a downward trend. The DGEIS failed to identify a series of negative impacts, caused by *The Proposed Action.* The DGEIS did not take in to account the negative impact that nitrogen reductions would have on the ecosystem. **In effect, The Proposed Action sets out to starve all algae without taking into consideration the nutritional needs of the estuaries**. The DGEIS did not consider that bodies of water with reduced nitrogen loading, historically have the highest incidences of harmful algae blooms. The DGEIS did not consider that two of our largest estuaries have among the lowest nitrogen loads on the east coast. Because the SWP ignores the living resources of the bays, it appears that the SWP strategy for the control of harmful algae is to simply starve them of nitrogen. **But it is unrealistic to expect that starving harmful algae will not affect the rest of the ecosystem.** The DGEIS did not consider that **Mecox Bay (LI)** has perhaps the highest density of oysters in the eastern United States. It also has **nitrogen concentrations at least 10 times higher than the eastern bays but has never experienced a HAB.**

The SWP provides no short range strategy to deal with the hundreds of thousands of existing septic systems that need immediate help to correct failing and dangerous situations. The SWP

offers no practical, cost-effective or short term strategy to deal with this massive problem. **The SWP is deficient by promoting the expansion of sewer districts without placing control on growth (increased wastewater flow) within the districts**, most of these sewer districts discharge to coastal waters through outfalls**.** The SWP falls short by not establishing a policy that prevents further increases in discharge and reductions in recharge; or requiring SCDHS to take action in this respect. It does nothing to prevent expansions of uses (increase in wastewater flows within the districts), which result in increased discharges by default. It leaves the protection of the water supply up to the local zoning and planning boards, which has had devastating effects in the past. As a result, enactment of "*The Proposed Action"* sets the stage for **negative impacts** on the groundwater supply and reduction in base flow. The DGEIS should have determined that leaving the fate of the water supply in the hands of zoning and planning boards would result in a **negative impact**.

The SWP has determined that areas with less than 10 feet to groundwater are priority areas for advanced sewage treatment. However, the SWP provides no meaningful evidence as to why this is necessary. To the contrary our review shows that these areas actually provide the best opportunity for natural denitrification to occur. In addition, the SWP has provided no evidence that pathogens have any better survival rate in these areas. The SWP has unnecessarily designated areas with less than 10 feet to groundwater as "priority areas" creating a **negative impact** on homeowners in those areas.

The sponsors of the SWP have labeled nitrogen as "**Public Enemy #1**" and the conventional sewage disposal systems as **"Monsters"**; as we will see in this review of the DGEIS, this is far from the truth and to the contrary, nitrogen and conventional systems are essential components of a balanced sewage disposal strategy in Suffolk County.

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Comments on the DGEIS Conclusions (as presented on pages 1-2 & 1-3 of the DGEIS)

The following are comments on some of the DGEIS conclusions which were presented on pages 1-2 & 1-3 as "*A summary of the key conclusions based on the assessments within this Draft GEIS*". Our comments on the "key conclusions" will include a statement of the conclusion (as presented in the DGEIS) followed by the comments.

Conclusion #1: "*Suffolk County groundwater and surface water resources have been impacted from nitrogen introduced by sanitary wastewater.*"

Comment: Obviously, wastewater treatment by-products that are discharged into the groundwater can have an impact; whether that impact is beneficial, harmful or neutral is the issue. Stating that there is an impact on water, in and of itself, is not meaningful and should not be listed as a "key conclusion". This is like stating "oxygen has impacted air"; its stating the obvious, but not useful in the context of a DGEIS conclusion.

In any event, the reality is that **the SWP has not shown harmful impacts caused by nitrogen loading, which is a necessary foundation for the plan to be credible.** Rather than presenting empirical evidence of cause and effect, the plan depends on computer models to speculate on what nitrogen levels will be in the distant future (and even what they are today). The computer models predict rising levels of nitrogen in our groundwater and surface waters; and then uses simulations to show how sewers will lower them. To solve the perceived problem of nitrogen loading the SWP's first choice is sewering practically all of Suffolk County (except for open spaces); defaulting to I/A OWTSs as a backup plan. As will be discussed later in this report we see that these speculative modeling solutions do not address the necessary "ecological end points" and that the "solutions" will be harmful in the short and long run and present **negative impacts**.

"Harmful impacts", caused by nitrogen loading, have not been demonstrated by the SWP.

Conclusion #2: *"The more than 380,000 existing onsite wastewater disposal systems (OSDS) that exist in Suffolk County are not designed to address nitrogen removal. "*

Comment: This statement is incorrect and misleading. Conventional Onsite Sewage Disposal Systems (OSDSs), consisting of a septic tank and leaching facility, are designed to treat wastewater and they are designed to remove nitrogen; the extent to which they do this depends on their individual design and location. (It should be noted that a large proportion of the 380,000 existing systems are in need of septic tanks and repairs in order to bring them up to conventional standards so they can properly treat for nitrogen and enhance their operation and improve safety). This SWP conclusion about nitrogen removal is one of the most important flaws in the SWP. By accepting this conclusion, the County has disregarded the denitrification processes that occur with Conventional Onsite Sewage Disposal Systems and therefore they have not accurately accounted for them in the wastewater plan. This disregard has resulted in the use of inaccurate nitrogen loading data in the SWP, which in turn has resulted in inaccurate conclusions about nitrogen loading and the impacts to Suffolk County's water resources (groundwater and surface waters). In the SWP the county has extensively used computer modeling to predict the effects of nitrogen loading on the water resources, and by inputting wrong data and assumptions into their models, their results are wrong.

All the nitrogen loading calculations and conclusions used in the SWP are in question

The fundamental task the County has failed to do in the SWP is to accurately account for the nitrogen loading from conventional Onsite Sewage Disposal Systems (OSDSs), including the degrees of denitrification that occur in the system and surrounding environment.

The following table (Table 1) depicts various stages of treatment and denitrification used in the SWP and compares them with a previous study done by Stony Brook University (SBU); the consultants for these two studies are the same. A comparison shows that in 2016 the consultants predicted a 66% reduction in nitrogen loading as a result of treatment with conventional onsite sewage disposal systems; then three years later in the SWP they reduced this reduction to as little as 27%. This had the effect of more than doubling the septic nitrogen load, with the stroke of a pen. As a result, the perceived impact of nitrogen from conventional systems doubled. **This incorrectly skewed the results and conclusions** in favor of sewering and away from the use of conventional disposal systems.

Table 1 -
A Comparison of Nitrogen Reductions for Conventional Onsite Sewage Disposal Systems using data from the 2016 Stony Brook University report, *Long Island South Shore Estuary Reserve Eastern Bays Report* (Eastern Bays Report) and the Suffolk County 2019 Draft *Subwatershed Wastewater Plan* (SWP).

Stages of Treatment (1)	2016 Eastern Bays Report % Nitrogen Removal	2019 SWP % Nitrogen Removal
Septic Tank	7%	6%
Leaching Field	35%	10%
Septic Plume	35%	0%
Aquifer	15%	0% for glacial outwash area 15% for Moraine area (2)
Hyporheic zone	0%	10 – 15% (use 15%) (4)
Total % Nitrogen Reduction (compounded) (3)	66%	27% for glacial outwash area 37% for Moraine area

(1) Terminology used is from the Eastern Bays Report (page 43)
(2) SWP specifies 0% denitrification in the glacial outwash plain and 15% in glacial Moraine (ES-Section 2.5.1)
(3) Reductions have been compounded as per Suffolk County correspondence.
(4) In lieu of empirical data for hyporheic denitrification, SWP used estimates from a wetlands study (Hamersly, 2001) to estimate the denitrification by hyporheic zones in Suffolk (SWP Section 2.1.5.1.5). We used the 15% estimate for the purposes of calculations in this comparison.
(5) Note this Table does not include natural denitrification that may occur in the riparian zone, where shallow septic systems and bog layers can provide conditions conducive for natural denitrification

According to the SWP, these nitrogen removal assumptions were changed based upon *"a consensus of the Nitrogen Load Model Focus Group"*. The change in the "Moraine Aquifer" nitrogen reduction was from 35% to 15%. This was based upon a study by C. Young in 2013 [Young Report], which

used the ratio of Nitrogen gas to Argon gas to predict the 15% denitrification in the Northport area (glacial Moraine area). The SWP then applied this number across the County and then assumed the glacial outwash area had less viable conditions for denitrification and reduced those areas to 0%. [ES-2.5.1] Such a drastic change, based upon the results of one study, using a computer model is not good science and poor engineering. Confirmation of these results for the glacial Moraine and further study of the glacial outwash plain should have been in order, prior to reducing denitrification levels to 0%. The 0% glacial plain assumption is illogical and does not take into account the reasonable-certainty that additional denitrification occurs in this zone, especially in the riparian zone along the south shore.

Naturally occurring denitrification in coastal areas were ignored or underrated in the SWP

In respect to this, it is well documented in the Suffolk County Department of Health Service's records that extensive layers of subsurface black peat (bog) exist along the south shore, which would be conducive to promoting substantial groundwater denitrification. Such peat layers appear to provide the necessary dissolved organic carbon source, that when coupled with low dissolved oxygen (DO) levels and increased detention times (traversing peat) provide a greater opportunity for for natural denitrification in coastal areas, especially in shallow groundwater areas near the shoreline. This phenomenon is further discussed in our May 6, 2018 report[Eastern Bays Review page 4] In addition, Figure 1 (next page) is a schematic demonstrating the expected mechanism for septic effluent and groundwater denitrification in a shallow groundwater area.

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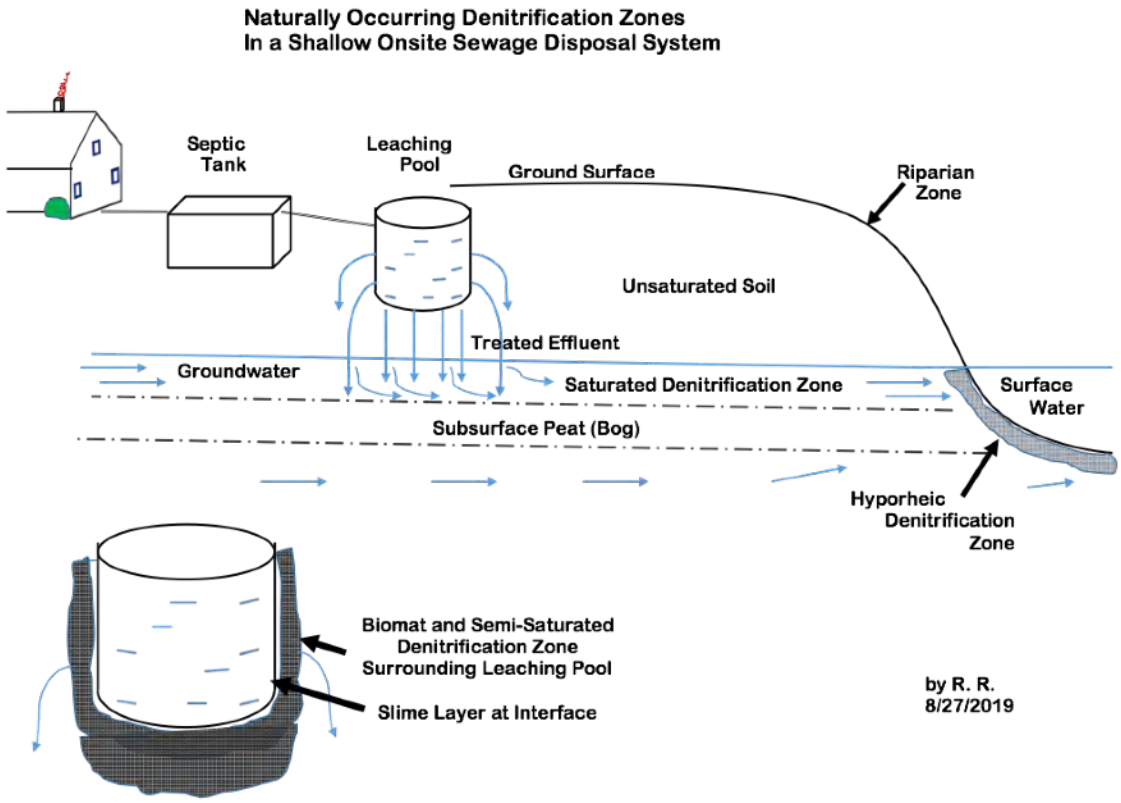
Figure 1



Further exaggerating the nitrogen loading from conventional disposal systems, the SWP changed the "leaching field" nitrogen removal from 35% to 10%. The original 35% nitrogen removal through a leaching field was documented in the Eastern Bays Report [SBU Report] a Suffolk County Department of Health Services Study by Andreoli et al, 1979. The justification for this 25% change was not apparent in the SWP and must be vetted before being applied across the County.

To address the nitrogen removal due to hyporheic zone denitrification, a 10 to 15% estimated reduction for hyporheic denitrification was applied in the SWP, based on a wetlands study done in Massachusetts (Hamersly, 2001). [2.1.5.1.5 Denitrification Effect of Coastal Wetlands and the Hyporheic Zone] These estimates (assumptions) were used by the SWP instead of the findings from local studies here on Long Island, which addressed hyporheic denitrification (e.g. Durand, 2014 and Slater, 1987). Durand showed 24 to 32% denitrification through the most influential hyporheic zone in the Forge River (Chapter 5). [See Durand Report] [Slater Report] Furthermore, in Chapter 9, the SWP recognizes that it does not have a handle on the effect of hyporheic denitrification and states:

> *"**There is considerable uncertainty regarding denitrification through the hyporheic zone** as the denitrification rate is spatially variable, even within the same water body. Denitrification through the hyporheic zone was included in the subwatershed-specific nitrogen load*

development with an estimated attenuation rate through wetlands, in acknowledgement of its potential importance on a site-specific basis. If the impact of the hyporheic zone is to be further considered, discrete subwatershed-specific sampling would be required to provide site-specific attenuation rates. This may be warranted for subwatersheds with high nitrogen load reduction goals, to further refine the load reduction targets."

In light of this information, **the results and conclusions of the SWP have been skewed and must be discounted.** The DGEIS cannot make a determination in favor of the SWP until the correct nitrogen loading assumptions are determined; this is the foundation of the plan, which is based on the nitrogen loading. The SWP has given no evidence that any empirical studies have been done on existing conventional sewage disposal systems to justify the assumptions used. In addition, the assumptions the SWP did use, were unfounded or incorrectly applied, reflecting poor scientific procedures. It was reported that the County had planned on doing extensive testing of existing conventional disposal systems as part of this process, but apparently decided not to. The adoption of the SWP can not proceed accordingly.

In addition, based on the information provided, the conclusion that "*The more than 380,000 existing onsite wastewater disposal systems (OSDS) that exist in Suffolk County are not designed to address nitrogen removal."* is **incorrect** and must be removed from the DGEIS.

The DGEIS should consider adding this statement:

Many of the 380,000 existing onsite wastewater disposal systems (OSDS) that exist in Suffolk county are in need of repairs, including septic tank additions and new leaching facilities, in order to bring the systems up to conventional standards, so they can maximize treatment for nitrogen, improve their operation and address safety concerns.

Conclusion #3: *The SC SWP (Appendix B of this document) evaluates the potential benefits of using Innovative/Alternative Onsite Wastewater Treatment Systems (I/A OWTS) and provides a recommended countywide roadmap that describes how, when, and where to use I/A OWTS, including proposed revisions to Article 6 of the Suffolk County Sanitary Code to accommodate their widespread use.*

Comment: This is not a "key conclusion", but rather a statement indicating where the reader can find information on I/A OWTSs. It states no environmental conclusions on the subject and should be removed as a conclusion. (It is perhaps better suited for an introduction or the table of contents.)

In any event, the SWP evaluation of the *benefits of using Innovative/Alternative Onsite Wastewater Treatment Systems (I/A OWTS)* is flawed and the Proposed Action will result in a negative impact(s).

The DGEIS should have more closely reviewed the following statements from the SWP (Section 2.2.2.2) when determining **negative impacts**.

Statements: (1) ***Figure 2-52*** *shows the 20-year cost per pound of nitrogen removed for each of the wastewater treatment-based nitrogen removal approaches, based on the specific Suffolk County-based costs identified above.*

*(2) Conventional OSDS are the most expensive treatment option per pound of nitrogen removed***.**

Figure 2-52

Figure 2-52 Comparison of Nitrogen Removal Costs for Wastewater Treatment Alternatives

Comment: These statements and graph indicate that the conventional sewage disposal system will be the least cost effective for nitrogen removal; **however**, a cost analysis to show this or the methodology was not evident in the SWP or the DGEIS. The *"costs identified above"* in the statement, actually showed the conventional system (OSDS) to be the most cost-effective installation. This omission, if correct, results in a misrepresentation of conventional systems and will effect the outcome of the DGEIS. As already discussed, the conventional systems remove nitrogen and have benefits over other methods of sewage disposal that have not been addressed in the SWP. As discussed later in this report, this omission will lead to **negative impacts** when the Proposed Action is initiated.

Conclusion #4: *The SC SWP provides recommended revisions to Article 6 of the Suffolk County Sanitary Code and to Appendix A of the Standards for Approval of Plans and Construction for Sewage Disposal Systems for Other than Single Family Residences to facilitate the more widespread use of "Appendix A" modified sewage disposal systems.*

Comment: Likewise, this is not a "key conclusion", but rather a summary of what the SWP has attempted to do with Article 6 and Appendix A. It draws no environmental conclusions on the subject and should be removed as a conclusion. (It is perhaps better suited for an introduction or summary.)

Conclusion #5: *The SC SWP provides initial recommendations for a variety of* ***other wastewater management strategies*** *that would ultimately yield a long-term, sustainable strategy, to address pollution emanating from untreated wastewater sources in Suffolk County.*

Comment: This statement concludes that *"**other** wastewater management strategies would ultimately yield a long term, sustainable strategy to address pollution emanating from untreated wastewater sources in Suffolk County."* This conclusion should be more specific as to what is meant by "other". Other than what? And what "pollution" is the SWP "addressing"? The statement also

uses the term "*untreated wastewater sources*", which is undefined. There are no "*untreated wastewater sources"* in Suffolk County; and if there were, they would be in violation of numerous codes. If the SWP is referring to conventional onsite sewage disposal systems (also known as onsite wastewater treatment systems) as being *untreated wastewater sources*, then the SWP is incorrect and does not understand the treatment processes involved in conventional systems. [See Policy Report pages 4-6] The SWP should correct this misstatement and include conventional systems in the SWP strategies. Until clarified, a specific analysis of this conclusion will have to wait; however, there are some comments that can be made about the **negative impacts** of the SWP *wastewater management strategies*.

Some of the strategies being presented by the SWP will be harmful in both the long and short run and they will not address the wastewater disposal needs of the residents of Suffolk County. In formulating strategies, the SWP should have considered the immediate needs of the 380,000 households with conventional onsite sewage disposal systems. Many of these systems have dangerous block leaching pools (subject to collapse), lack septic tanks and/or are in hydraulic failure ("backing up"). **The SWP offers no practical, cost-effective or short term strategy to deal with this massive problem**.

The SWP fails to recognize conventional systems as a viable strategy – results in a negative impact

The failure of the SWP to include conventional systems in its wastewater management strategy results in a **negative impact**. The SWP appears to be fixated on the perceived "nitrogen problem" and fails to demonstrate an understanding of the dire situation that homeowners are put into when their septic systems fail and the public health consequences. With a failed system, homeowners can not flush toilets, do laundry, wash dishes, bath or use other water in their homes. In the meantime, homeowners are adding all types of chemicals to try and fix their problems, when what they really need to do is upgrade their systems in a regulated and cost effective manner. The decision on repair and maintenance is usually a knee-jerk reaction to the failure; with the homeowners under pressure to make a quick decision. Sometimes it as simple as unclogging a pipe; but more likely with older systems, the problems stem from clogged or collapsed leaching facilities. There are thousands of existing systems that do not have septic tanks, have dangerous block pools (are subject to collapse) and require continuous treatment to prevent sewage back-ups. When offered solutions, the homeowner will most likely opt for the fastest and least expensive solution and not necessarily the best. The SWP should consider this issue as a priority.

The SWP does not propose practical or cost-effective help for this problem. As a result, the homeowners will be left to their own demise, until costly sewers or advanced treatment systems become available (sometime in the future). It is understandable, when a homeowner is offered an $800 chemical "treatment" (e.g., adding sulfuric acid) versus a $3,000 leaching pool addition or a $7,000 total replacement, they are more apt to go for the $800 "fix". Unfortunately, "you get what you pay for"; the $800 chemical treatment may buy another few years of life from the sewage disposal system, but subsequent chemical treatments will be less effective over time, until there is irreversible clogging; requiring structural additions. Besides being a short term solution to the sewage disposal problem, if not used properly, chemical treatments can be harmful to the septic system and groundwater supply. The SWP should consider this and formulate a strategy to educate homeowners and aid them in maintaining their conventional systems; so the systems remain viable and cost effective.

The SWP needs to address more cost effective and practical help for homeowners with pre-existing OSDSs. Article 6 of the Suffolk County Sanitary Code, appears to be encouraging the "upgrade" of older systems, though they are not exactly offering help. Article 6 now states that after July 1, 2019 you need a permit to upgrade an existing system, if it fails. What is meant by "upgrade" is open for interpretation. Installing septic tanks, where none exist, and replacing failed leaching pools would be a positive step forward, both to the homeowner and the environment. **This should have been addressed in the SWP; it was not.** Such upgrades will be expensive (though not as expensive as installing the I/A OWTSs or sewers); and homeowners need support, both financially and technically, to upgrade their systems. Rather than septic systems being excluded from grant programs, and focusing only on sewers and I/A OWTSs, the SWP and Suffolk County should support the upgrade of the thousands of existing sewage disposal systems, which have outlived their expected lifetime and which need replacement and upgrading. Upgrading these systems to conventional standards is an alternative that in many situations will improve wastewater treatment and provide more practical benefits than installing I/A OWTSs or sewers. Such fundamental upgrades will improve the ability of the septic systems to treat contaminants such as nitrogen, COD, BOD and pathogens and provide better access for maintaining and monitoring the systems. Considering the benefits of conventional systems, the SWP should include a program for conventional systems in its strategy; otherwise, the unaddressed problems will continue for decades. In this respect, **The Proposed Action, as is, will have a negative impact on the quality of life, safety and public health of the residents of Suffolk County; and the DGEIS should include it as such.**

The SWP sewering strategy will have negative impacts

The SWP sewering strategy will have a **negative impact**. Prior to accepting the SWP and its DGEIS, the public and officials should look to the past. The primary driving force for sewering Nassau and Suffolk Counties has been economic development. With the installation of sewers, properties have been more intensely developed, creating higher density projects and increasing opportunities for developers. When sewers are installed, the limits on development, imposed by the limitations of on-site sewage disposal systems, are removed; and developers are freed to seek higher density zoning and increase the population densities and size of businesses. Historically, the installation of sewers has led to more urbanized environments. The urbanization of Queens and Nassau County are prime examples of this process; as sewers and poor planning have turned these once rural communities into high population density areas. As a result, it is no surprise that Queens "ran out of water" and Nassau is facing a water crisis; both exceeded their sustainable yields. Previous bad decisions about sewage disposal have resulted in the depletion of our groundwater supply and have caused harmful impacts on our estuaries. [Reference LICAP Report Review, pgs. 3-6] The SWP recommends more of the same. In this respect, *The Proposed Action* (sewering) *will have a **negative impact** on our water supply and quality of life.*

The SWP does not consider the nutritional needs of the ecosystem endpoints

Conclusion 8: *"Water quality improvement would support a healthy aquatic ecosystem."*

Comment: This "conclusion" is a gross assumption. Use of the words "improvement" and "healthy" are qualitative (subjective) terms that neither define the goals nor express the outcome.

Managers realize that bays are complex and almost universally use management options that consider an entire ecosystem. Ecosystem based management is an integrated management

approach that recognizes the full array of interactions within an ecosystem rather than considering single issues, species, or ecosystem services in isolation.

In contrast, the SWP's specifically states that the Plan ignores the interactions of "*the presence of submerged aquatic vegetation, pathogens, fish kills, populations of finfish and shellfish"*. The SWP only considers the specific issue of how nitrogen reduction **may** affect certain species of algae. Because the SWP has not considered the nutritional needs of the ecosystem endpoints, it is impossible to determine the required nitrogen load and unintended consequences are likely.

Some of the unintended consequences of "successful" nitrogen reduction efforts include collapsed shellfish populations, dramatic losses to the traditional baymen community and increased incidences of harmful algal blooms.

The implementation of the Proposed Action (if it is successful in its goal of nitrogen reduction in the estuaries) will likely result in a negative impact to the aquatic ecosystem if the major form of nitrogen available is preferentially utilized by harmful algae"?

Until we agree on its intended use, we cannot calculate the nutritional needs of an estuary. Shellfish require nutrients but the SWP priority ranking system explicatively fails to consider their nutritional needs. The SWP must consider the other endpoints listed above not just nitrogen and HABs.

The SWP plans to starve the bay of nutrients

Conclusion 9. *"Implementation of the Proposed Action would not result in a negative impact to the natural environment, or historic and archaeological resources located throughout the County. "*

Comment: The conclusion is inaccurate: *The Proposed Action* may actually have a **negative impact** to the natural environment. The SWP has proposed Nitrogen as a surrogate for an indicator of the quality of the bay. It proposes that nitrogen loadings be reduced in order to starve harmful algal yet somehow assumes or concludes that this will not affect the rest of the bay's ecosystem. The SWP makes no attempt to consider the nutritional needs of our bays. If the SWP nitrogen reduction goals are pursued, there is a grave danger that Long Island's marine environment and its maritime tradition of seafood harvesting will be destroyed.

A major goal of the SWP was to rank the 136 sub-watersheds so that nitrogen reduction efforts may be focused on those areas having the most severe nitrogen loading and flushing and the presence of harmful algal blooms (HABs). But the Plan explicitly states that "*other criteria were initially considered for incorporation into the sub watershed evaluation but were ultimately not included in the nitrogen load reduction priority ranking due to insufficient data to properly characterize the particular endpoint including presence/absence of SAV, pathogens, fish kills, shellfish*". (ES-36 "Other Factors"). By doing this, **the Plan has distanced itself from the ecosystem that the Public believes will somehow be nurtured.** The things we most value about our bays, being able to swim without concern of pathogens, fish and harvest shellfish are not considered.

The SWP does not address an important question:

Under what conditions do harmful algae dominate the algal community?

For the majority of Eastern Long Island's bays, **nitrogen is the limiting nutrient.** This means that all the nutrients needed for algae to grow are present but the amount of nitrogen determines that growth. **Low levels of nitrogen restrict and can reduce algal populations.**

Shellfish consume algae as food and are capable of filtering great quantities of water. For instance, during the 1970's hard clams filtered the entire Great South Bay every three days. But if that water is low in algae, shellfish will not thrive. When nitrogen was added to a marine body of water, both the microalgal concentrations and the growth of clams increased "providing direct evidence of a link between nitrogen loads and the growth response of clams." (Carmichael, R.H. 2004).

It has been a goal of many environmental groups to increase shellfish populations. Despite millions of dollars and great effort, shellfish reseeding efforts have dramatically failed. The reasons for failure are complex but if nitrogen is targeted to be reduced, managers should consider the following statement: *"Nutrient loading can have significant but complex effects on suspension-feeding molluscs with select species (e.g., oysters and clams) benefiting from eutrophication and other species performing poorly (e.g., scallops and slipper limpets). Future management approaches that seek to restore bivalve populations will need to account for the differential effects of nutrient loading as managers target species and regions to be restored. (Wall, C.C., Gobler, C.J., Peterson, B.J., Ward, J.E. 2013)*

Shellfish remove algae that contain nitrogen from the water but the SWP does not account for that. The nitrogen removed by oyster harvest is similar to that removed by hard clams. (Reitsma, J., 2017) The impact that these shellfish can have on nitrogen loading has been estimated. "The harvest of 3,750 oysters is estimated to compensate for the nitrogen wastes from one person in the watershed" (Rheault, 2008). Another way of saying this is that one person's nitrogen supports 3,750 oysters.

Because shellfish lie dormant when food sources are low but respond to the seasonal blooms of algae, shellfish may be described as "buffers of the bay". If harmful algae are part of the seasonal algal assemblage, shellfish can consume them. However, if harmful algae dominate the algal community, the shellfish will stop feeding and may starve. S**hellfish starvation during a HAB is due to a combination of the toxicity of the HABs and/or the small size of the harmful algae**. For instance, the Latin name of *A. anophagefferns (Brown Tide)*, translates to a "small sphere capable of causing starvation".

Rainfall and Drought Effect Harmful Algae Blooms

One of the intriguing observations concerning HABs is their relationship to rainfall. Harmful Algae have been known to initiate blooms coincident with low precipitation or drought. Lower precipitation reduces the amount of nitrogen from atmospheric deposition and decreases the ground water flow due to the reduced hydraulic pressure caused by the lack of rain. The nitrogen input from fertilizers and septic systems that is carried through ground water flow to the marine waters also slows. Since the SWP has concluded that groundwater sources of nitrogen represent the majority of the nitrogen loading to our bays, droughts give us a glimpse of how our bay responds to significant nitrogen reductions. It is not comforting to realize that reducing nitrogen promotes HABs!

During periods of increased rainfall, the impacts of fluctuating amounts of nitrogen due to precipitation are amplified when a bay's nitrogen levels are low. These nitrogen pulses can come from precipitation (atmospheric deposition) and the increased ground water flow. In a bay with

low nitrogen concentrations and low populations of shellfish, these pulses can have a significant impact on the seasonal algal blooms that are called an algal succession. Timing may be critical. "*The results of study support the view that moderate nutrient inputs may have a beneficial effect on the functioning of coastal ecosystems, stimulating the taxonomic diversity through the growth of different taxonomic groups and taxa.* (Spatharis et al., 2017)

The algal community is complex. For instance, a twenty-two month study of the succession of algae in Narragansett Bay found at least 138 phytoplankton taxa (species). [Karentz, D. & Smayda, T.J. 1984]. If the seasonal algae are established prior to a nitrogen increase, added nitrogen may increase that population. But if the seasonal algae are too low in population, HABs may be able to out-compete them. It is under low nitrogen conditions that HABs have shown to have competitive advantages over other algae. "The N-uptake characteristics of A. anophagefferens (low Ks and Vmax for NH4+) suggest that this species is well adapted to low-nutrient environments" (Lomas et al., 1996).

The SWP should avoid conditions that cause low levels of nitrogen rather than encourage it

Rain cannot be controlled; however, managers should be looking to avoid the conditions that cause low levels of nitrogen rather than promote management plans that encourage it.

Long Island's eastern bays have some of the lowest levels of nitrogen loading of any estuary in the United States, have lost 95% their shellfish and are the international epicenter for HABs. **If we further reduce the nitrogen loading to our bay, we will decrease shellfish populations,** increase the effect of intermittent nitrogen loadings and <u>increase</u> the potential for HABs.

Until we agree on its intended use, we cannot calculate the nutritional needs of an estuary. Shellfish require nutrients but the SWP priority ranking system explicatively fails to consider their nutritional needs. Instead, it relies only on nitrogen loadings, flushing rates and the presence of HABs.

Because the SWP ignores the living resources of the bays, it appears that **the SWP strategy for the control of harmful algae is to simply starve them of nitrogen. But it is unrealistic to expect that starving harmful algae will not affect the rest of the ecosystem.**

Reducing nitrogen loads has not worked

Despite the mantra that nitrogen must be reduced at all costs (or perhaps for 4 Billion Dollars), nitrogen reduction has not always reduced HABs; and shellfish populations have been negatively affected. Some examples where **"successful" nitrogen reduction has not yielded the expected results** are given below.

In 1977, over 8,000 baymen reaped the bounty of a major hard clam population in the Great South Bay over 600,000 bushels of hard clams were harvested. But there was little concern as to why the shellfish populations were thriving. After the creation of the Great South West Sewer District, nitrogen loadings to the western part of that bay were reduced 70%. Overall, the GSB nitrogen loadings were reduced by 40%. Contrary to what the SWP now suggests should have happened, the opposite occurred; shellfish populations collapsed and Brown Tides were observed for the first time. Later a cadre of twelve scientists (Anderson et al. 2008) wrote "*The off-shore rerouting of sewage previously discharged directly into the western Great South Bay during the early 1980s led to lower levels of dissolved inorganic nitrogen there, thus creating a nutrient regime which reduced*

total annual phytoplankton biomass, but favored dominance by A. anophagefferns (Brown Tide) as blooms began to first develop in the late 1980s." In layman's terms, the sewer system reduced the food upon which the clams depended and **upset the nutrient balance to favor the Brown Tide**. In hindsight, the decision to reduce nitrogen to the GSB was not a good idea for the bay.

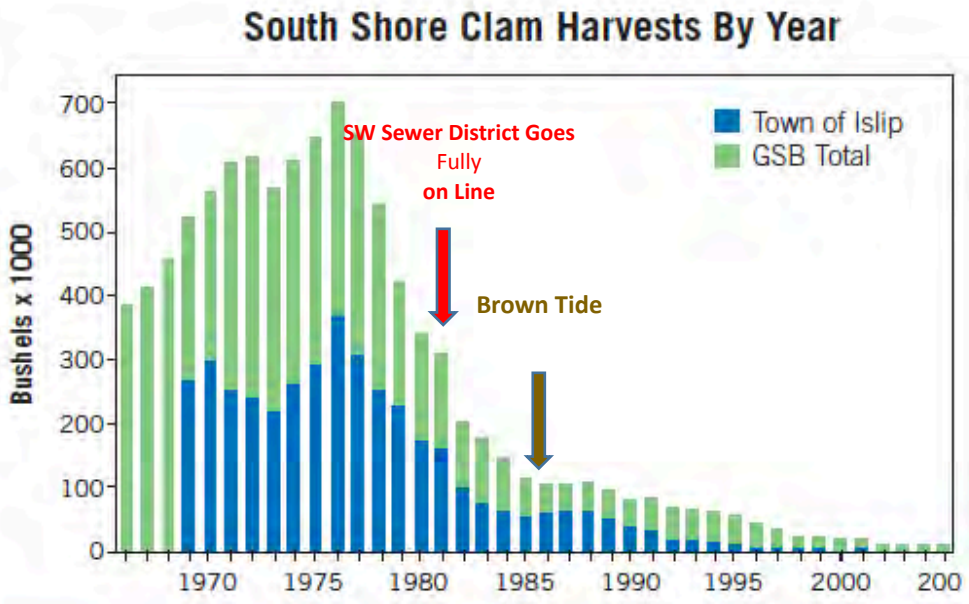


Figure 1. Hard clam (*Mercenaria mercenaria*) commercial landings from Great South Bay (GSB) and those limited to the Town of Islip, NY (modified from Kraeuter et al. 2008).

Sarasota Bay recently reduced its nitrogen loading by 64%. It eliminated 75% of its septic systems, upgraded sewer systems to deep-water recharge wells and used some of the treated effluent from the sewer systems to irrigate golf courses, citrus fruits and lawns. The efforts were documented in the updated 2014 Comprehensive Conservation and Management Plan (CCMP) where their nitrogen reduction success was entitled "The Voyage to Paradise Reclaimed". In 2018 "*Sarasota declared a state of emergency amid a toxic red tide outbreak that killed area marine life, stifled tourism and sickened people.*" Sarasota Bay was closed for recreational use for the entire winter season. The "successful" reduction in nitrogen loading did not prevent the HABs.

Peconic Bay drastically reduced commercial duck farming, eliminated the processing of menhaden (bunker) and upgrade sewer systems. It now has the lowest level of nitrogen loading of any major estuary in the United States. But its shellfish industry has declined by 90% and Peconic Bay experiences repetitive HABs. "*An examination of spatial and temporal patterns of concentrations of A. anophagefferens cells (Brown Tide) and inorganic nutrients indicates that blooms occurred when inorganic nutrient levels were low*" (Cosper et al, 1989).

The chart (below) was adapted from a SOMAS (School of Marine and Atmospheric Sciences) slide presentation. New information was added as it became available. When a literature search provided evidence that an estuary had experienced an HAB the results were added to the right

column. The shading of the right column highlights that HABs are predominately associated with those marine water bodies that have the lowest nitrogen loadings.

Nitrogen Loading of some major estauries or water bodies

	N Load (kg N/ha yr)	Reference	Harmful Algal Blooms
Sage Lot Pond, Massachuetts	14	Valiela et al, (2000a)	
Peconic Bay, New York	19	Nature Conservancy (2014))	1986 to present
Sarasota Bay. Florida 2016	21	2017 After reductions per Albertson	2016 k. breves
Coastal Bays	20-40	Nutrients in Estuaries -NEP (2010)	intermittent in all
Morton Bay, Australia	24	O'Donohue et al. (2000)	1986?, 1995-2002
Bannegat Bay, New Jersey	26-50	Bowen et al. (2007): NEP (2010)	1988-2013
Tampa Bay, Florida	28	Bianchi et al. (1999)	recurring Red Tide - K brevis
Great South Bay, New York	38	Valiela & Kinney (2008)	1986 - present
Sarasota Bay, Florida 1995	56	Bianchi et al. (1999)	
West Falmouth Harbor, Massachusetts	76	Carmichael et al. (2004)	
Venice Lagoon, Italy	130	Sfriso et al. (1992)	
Pensacola Bay, Florida	140	Nutrients in Estuaries -NEP (2010)	
Roskild Fjord, Denmark	204	Nienhuis (1992)	
Chesapeake Bay	210	Nutrients in Estuaries -NEP (2010)	
Bass Harbor, Massachusetts	225	Kinney & Roman (1992)	
Great Bay, New Hampshire	252	Short & Matthieson (1992)	
Delaware Bay	260	Nutrients in Estuaries -NEP (2010)	
Narragansett Bay, Rhode Island	280	Nutrients in Estuaries -NEP (2010)	once during 1985 drought
Quashnet River, Massachusetts	350	Valiela et al. (2000a)	
Waden Sea, Northern Europe	500	Nienhuis (1992)	
Childs River, Massachusetts	601	Valiela et al. (2000a)	
Yaquina Bay, Florida	1000	Nutrients in Estuaries -NEP (2010)	
Jamacia Bay, New York	1093	Benotti (2005)	few - if any

In most cases, researchers have found no link between High nutrient levels and incidence of Harmful algal

An isotopic study revealed that the robust hard clam population of **Narragansett Bay (RI)** obtained half of its nitrogen from treated sewer effluent. "*In the five years after the major Waste Water Treatment Facilities (WWTFs) came on-line for nutrient removal and just over a decade since the process began, net production may have decreased, and the process of oligotrophication begun*".

(Oczkowski et al. 2018) Oligotrophication is the opposite of eutrophication. Nitrogen loadings have decreased by 55% but shellfish populations are in decline. **Managers have now modified the sewer systems' seasonal nitrogen discharge limits to accommodate the growth of the clams.**

Mecox Bay (LI) has perhaps the highest density of oysters in the eastern United States. It also has **nitrogen concentrations at least 10 times higher than the eastern bays but has never experienced a HAB.** Even though a Comprehensive Scientific Study of Mecox Bay (Gobler, 2003) concluded that "*the **high nutrient concentrations resulted in healthy shellfish populations***", the SWP has ranked Mecox Bay as Priority 1 for nitrogen reduction.

Nitrate **additions** during mesocosm and bottle experiments consistently have yielded reduced *A. anophagefferens (Brown Tide)* cell densities relative to competing algae. (Keller and Rice, 1989; Gobler and San˜udo-Wilhelmy, 2001a).
Some phytoplankton such as diatoms often outcompete Brown Tide when inorganic nutrient loads are high.

Looking to how other estuaries have responded to nitrogen loadings without considering all the possible factors that may be involved is of course simplistic. But that is the point. Because the SWP is not considering the complexity of the ecosystems, it cannot predict the outcome of nitrogen reduction.

The SWP conclusion that *"Implementation of the Proposed Action would not result in a negative impact to the natural environment, or historic and archaeological resources located throughout the County."* is not accurate but rather should state:

The implementation of the Proposed Action (if it is successful in its goal of nitrogen reduction in the estuaries) will likely result in a negative impact to the natural environment.

Conclusion #10: ***Human health benefits*** *may be realized with the improvement in water quality as it pertains to possible reduction in harmful algal bloom (HAB) events, improved coastal ecosystems and improved water quality.*

Comment: This statement implies that there is something wrong with the health of the residents in Suffolk County that reducing nitrogen will resolve. The SWP does not describe any diseases or abnormalities that reducing nitrogen will cure ("human health benefit"?). This is an illogical and unfounded statement and should be removed from the SWP. No one is ill from nitrogen poisoning and in fact the nitrogen levels in surface and groundwater are acceptable. This SWP conclusion should be removed from DGEIS and a more appropriate statement, if necessary would be:

Reduction in total nitrogen loading to surface waters and groundwaters would have no impact on water quality that will result in an improvement in human health.

Conclusion #11: ***Growth inducement*** *would be mitigated by maintaining the current review and approval processes in place on the County and the local levels.*

Comment: This conclusion ignores the reality of the **negative impact** that The Proposed Action will have on **growth inducement**. For the SWP to ignore the negative impacts that such infrastructure projects have on a community's way of life is disingenuous and not in touch with reality; one only has to look at the Town of Babylon and how its zoning broke down and sprawl took over after the SWSD was built; placing a strain on the water supply and putting the plant over capacity. By deferring protection of our water supply to individual zoning boards, the SWP is signing the death warrant for our water supply. The zoning boards are notorious for issuing approvals on a piece meal basis that result in a cumulative increase in population densities and increased wastewater flows. This puts a strain on the existing sewage treatment plants and eventually puts them over capacity. In the meantime, the zoning and planning boards continue approving increases in population densities (wastewater flow) unaware that they are exacerbating the problem. **The SWP is deficient in promoting the expansion of sewer districts without having control on growth within the district**. As previously discussed, the primary goal of the SWP is to promote economic development, and sewering will do this and lead to overdevelopment and destroy what is left of the rural environment and deplete the water supply. Although the SWP assures us that the local zoning boards will prevent urban sprawl and over development (growth inducement), history tells us different; one only has to look at western Long Island to see the impact of unbridled development spurred on by sewers. **The SWP turns a blind eye to the phenomenon of growth inducement caused by sewering and the DGEIS should declare The Proposed Action to have a negative impact.**

<u>Conclusion #12</u>: *The Proposed Action is forecasted to result in reduced nitrogen levels in untreated water at community wells within 50 years of securing a stable funding mechanism where this same reduction is forecasted to be achieved in two centuries if no action was taken by the County.*

<u>Comment:</u> The community wells are not having a problem with nitrogen; other than the one predicted by computer modeling. As previously discussed, the nitrogen loading assumptions are in question, so the results of this forecast is not dependable. If the nitrogen loading assumptions are less, then there will be less nitrogen loading and no problem; speculated or in reality. The water quality for nitrogen is presently good; and should remain so if population densities are controlled and the policy of allowing treated water to be discharged into coastal waters is halted. The Proposed Action, including "*securing funding*" and reducing nitrogen, will have no beneficial public health effect on community wells and is not cost-effective.

[Remainder of page deliberately left blank]

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The following is a discussion of statements in the DGEIS and SWP and the potential negative impacts not identified by the DGEIS.

First the statement is given, followed by comments.

Sobering Statistics (Page 1-9 SWP)

Statement: *Sobering statistics of nutrient related impacts to Suffolk County waters include:*

- *41.2 percent increase in nitrogen in the upper glacial aquifer from 1987 to 2013;*

- *93.2 percent increase in nitrogen in the Magothy aquifer from 1987 to 2013;*

- *10 percent increase in nitrogen concentrations in Suffolk County marine waters in the past 10 years, and more specifically:*
  45.7 percent increase in nitrogen concentrations in Long Island Sound harbors;

  53.8 percent increase in nitrogen concentrations in Peconic Estuary enclosed bays;

  60.4 percent increase in nitrogen concentrations in the far eastern south shore bays, and
  30 percent increase in nitrogen concentrations in eastern Great South Bay;

Comment: These **"sobering statistics"** paint a grim picture of the water quality in Suffolk County waters; or do they? The statistics presented here are indicative of how results can be skewed. For example, let's look at the 41.2% increase listed above. The 41.2 percent increase in nitrogen in the upper glacial aquifer occurred over a period of 26 years. What the 41.2 % does not indicate is that the average nitrogen concentration in the glacial aquifer is only 3.58 mg/l, which is well within drinking water standards of 10 mg/l. In other words, the nitrogen increased approximately 1 mg/l (from 2.53 mg/l to 3.58 mg/l) over a period of 26 years; this is not bad. **The SWP chose to use the 41.2% increase to make things look bad, when they really weren't.** There are numerous examples of this type of manipulation throughout the SWP. Another example is the 93.2% increase in nitrogen in the Magothy aquifer for the same time period, 26 years. **A 93% increase sounds terrible**, **until we look at the real numbers.** The average nitrogen concentration after 26 years is 1.76 mg/l in the Magothy aquifer; well within drinking water standard of 10mg/l. This means the nitrogen concentration increased by .85 mg/l (.91 to 1.76 mg/l) over the course of 26 years; this is not bad. The SWP chose to depict it as a 93% increase to make things look bad; *sobering statistics*!

Furthermore, the SWP claims that the overall increase in nitrogen concentrations for all the marine waters in Suffolk was 10 percent over a ten-year period. This 10% statistic does not help us to draw any useful conclusions, and appears only to be provided to build a case against nitrogen. Lumping all "contributing waterbodies" together does not yield a true picture of water quality or identify the anomalies of localized areas. We also questioned why the SWP only used the last 10-years worth of data for the marine waters and not a longer period of time, for which they had data available. Reportedly, it had to do with the incompatibility of data due to changes in analytical techniques; however previous reports had used all the data and were able to draw conclusions. We decided to take a hard look at the data for two of the sampling stations in the Great South Bay, in order to see how they compared to the SWP's approach of lumping together

"waterbodies" and using a ten-year period of data to develop trends. The results raised questions and concerns.

Below are two graphs from the SWP (Figures 1-5i & 1-5g), showing ten-years worth of data from Great South Bay "waterbodies" and depicting upward trends in nitrogen concentrations (with 23% and 30% increases). The next graph (Figure 5-11) is from the Comprehensive Water Resources Management Plan (CWRMP), and shows over 30-years worth of data from various sampling stations in the bay with an unequivocal downward trend in nitrogen concentrations; the opposite of the SWP results. Figure 3-40 is another graph from the SWP, which is similar to the one from the CWRMP, but showing only 10 years of data; it had similar results to the CWRMP results. **It appears that the SWP choice to lump together sampling station data presented an overall misportrayal of the nitrogen concentrations in the Great South Bay; and masked the existing low concentrations of nitrogen in the bay.**

Figure 1-5i

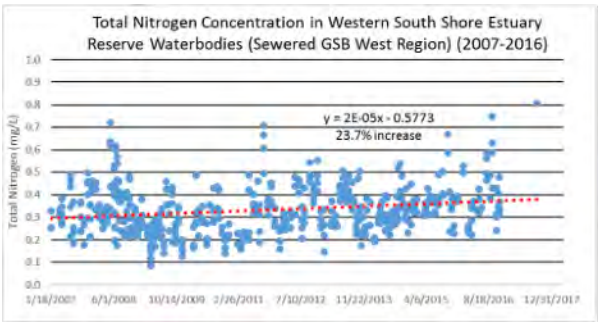


Figure 1-5g

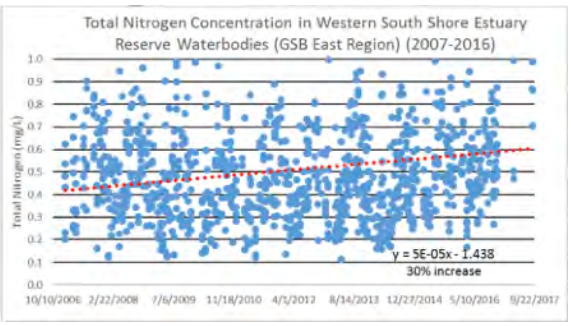


Figure 5-11 (from CWRMP)

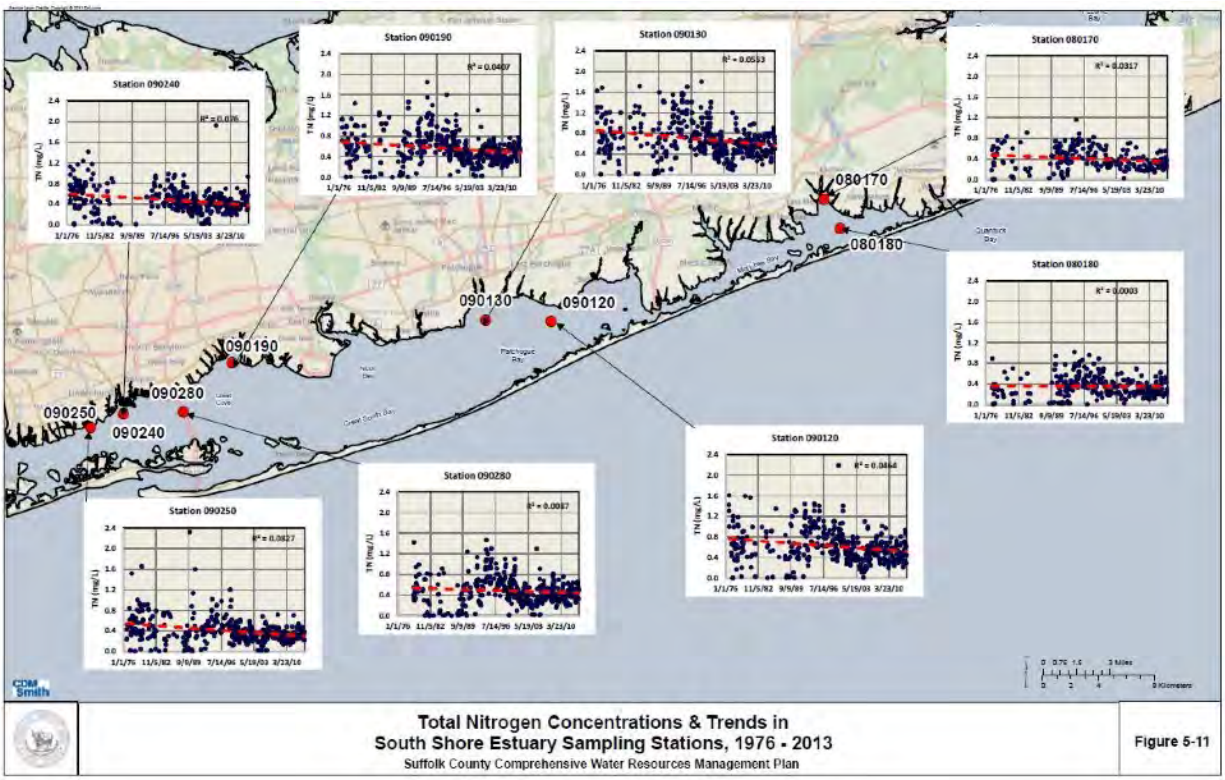
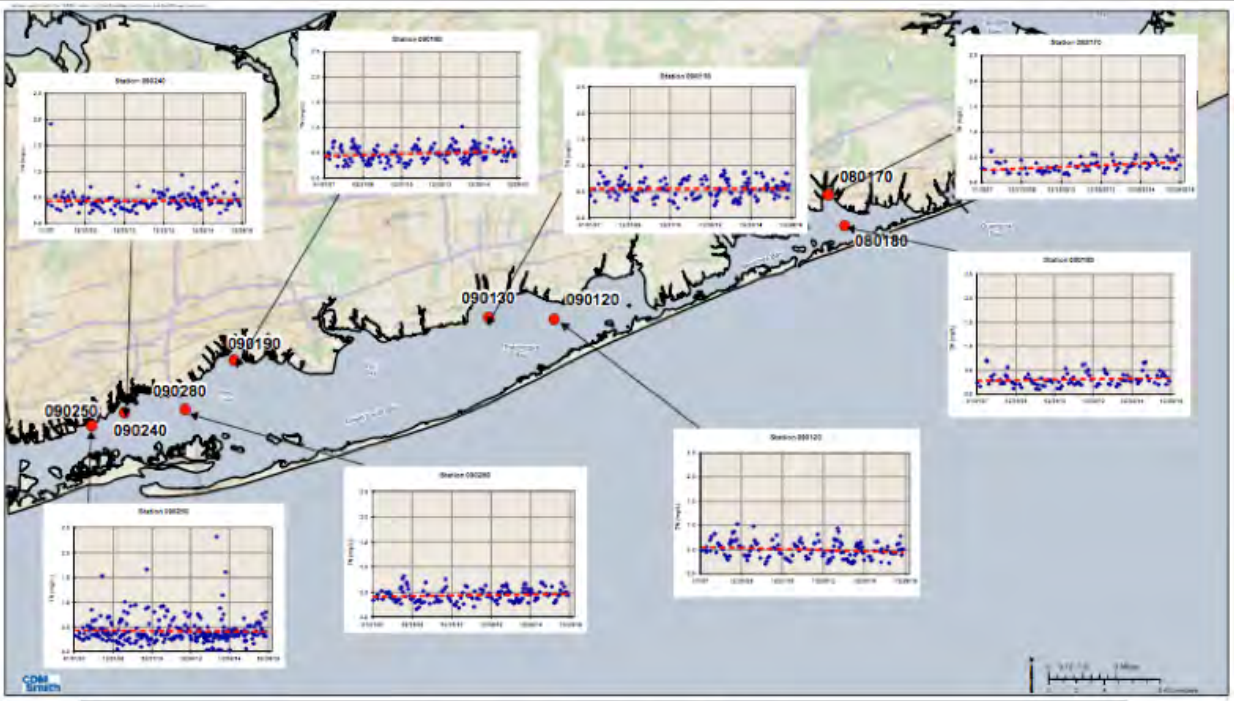


Figure 3-40 (from SWP)



Total Nitrogen Concentrations & Trends in
South Shore Estuary Sampling Stations, 2007 - 2016

Figure 3-40

Figure 3-41

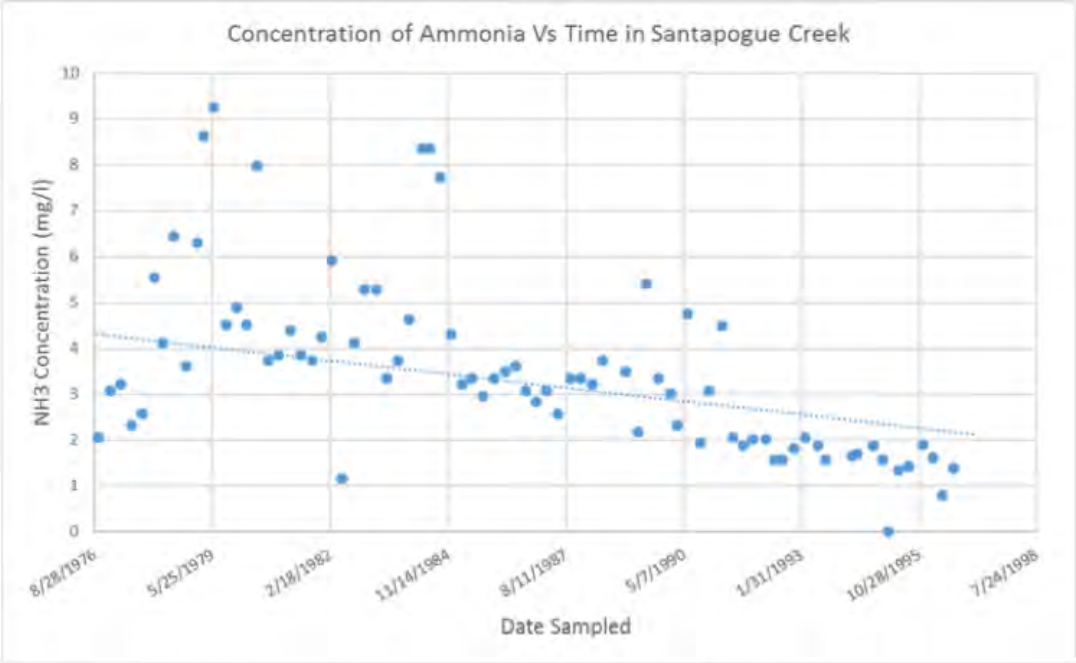


Figure 3-41 Declining Ammonia Concentrations in Santapogue Creek

To check this, we ran our own program on several sampling stations in the Great South Bay. Two of the results (graphs) are shown in Figures 110 and 170 (next page), and confirmed what the CWRMP (Figure 5-11) and the SWP (Figure 3-40) had found; downward trends in nitrogen concentrations. However, by using a ten year reporting period and lumping sampling station data together, the SWP showed an upward trend in nitrogen concentrations. The SWP changed the reported time period and arranged a linear fit; lumping all the "contributing waterbodies" together. As we see from a comparison of the graphs, this does not yield a true picture of water quality and can skew the results to appear good or bad, depending what sampling station data and time period is used. **This misportrayal of nitrogen being on the rise and needing "remediation" appears to be a common theme and pattern throughout the SWP and DGEIS.**

Statement: ***Figures 3-41**, **3-42** and **3-43** illustrate ammonia concentrations in three streams located within the Southwest Sewer District (SWSD) and discharging to Great South Bay, Santapogue Creek, Penataquit Creek and Champlin Creek, respectively. From west to east within the SWSD, the streams all show the beneficial result of sewering as ammonia levels began to decline circa 1980, shortly after the Bergen Point WWTP began to operate. Nitrogen in wastewater that previously discharged to groundwater via OSDS, discharged to streams and was conveyed to the Great South Bay was diverted to the Bergen Point WWTP which ultimately discharges treated effluent off- shore via an ocean outfall. The figures each show significant changes in pre-sewering and post- sewering ammonia concentrations, with the largest and western-most stream showing the most dramatic declines of over 2 mg/L.*

Comment: Figure 3-41 is shown on the previous page. With the limited information given, it is impossible to verify to what extent the installation of sewers affected the cited *creeks* (*streams*). It is logical to conclude that the elimination of thousands of septic systems would have an effect on the nitrogen levels in the groundwater and surface waters in the sewered area. The conclusion that "*the streams all show the beneficial result of sewering"* can not be supported by using only the levels of ammonia found in the streams. What about the other parameters that are indicators of wastewater contamination? Also, there are other factors, other than the elimination of septic systems and sewering, that may have contributed to the reduction in ammonia. These include the possibility that there is less fertilizer being used along the shorelines or that there have been some drainage improvements that reduced direct runoff or that illegal direct discharges were corrected or that there is less wildlife residing (defecating) in the *streams* or less decomposition of organic matter occurring in the immediate area. The use of ammonia concentrations in the selected *creeks* is a weak argument for sewering. Anyone familiar with the operation of conventional sewage disposal systems knows that the effluent from the conventional systems is expected to convert to nitrates, shortly after leaving the treatment zone adjacent to the leaching area, and the nitrogen would not normally be in the ammonia form as it works its way towards surface waters. However, this nitrate conversion may not occur, if the disposal systems are improperly installed directly into groundwater or allowed to discharge directly (no soil filtration) into surface waters. The effluent would then be primarily in the form of ammonia. If ammonia in the *streams* was caused by faulty septic systems, then the problem could be corrected by repairing the existing systems. This would have been more cost-effective than a sewer system and have less **negative impacts** on the environment.

Figure 110

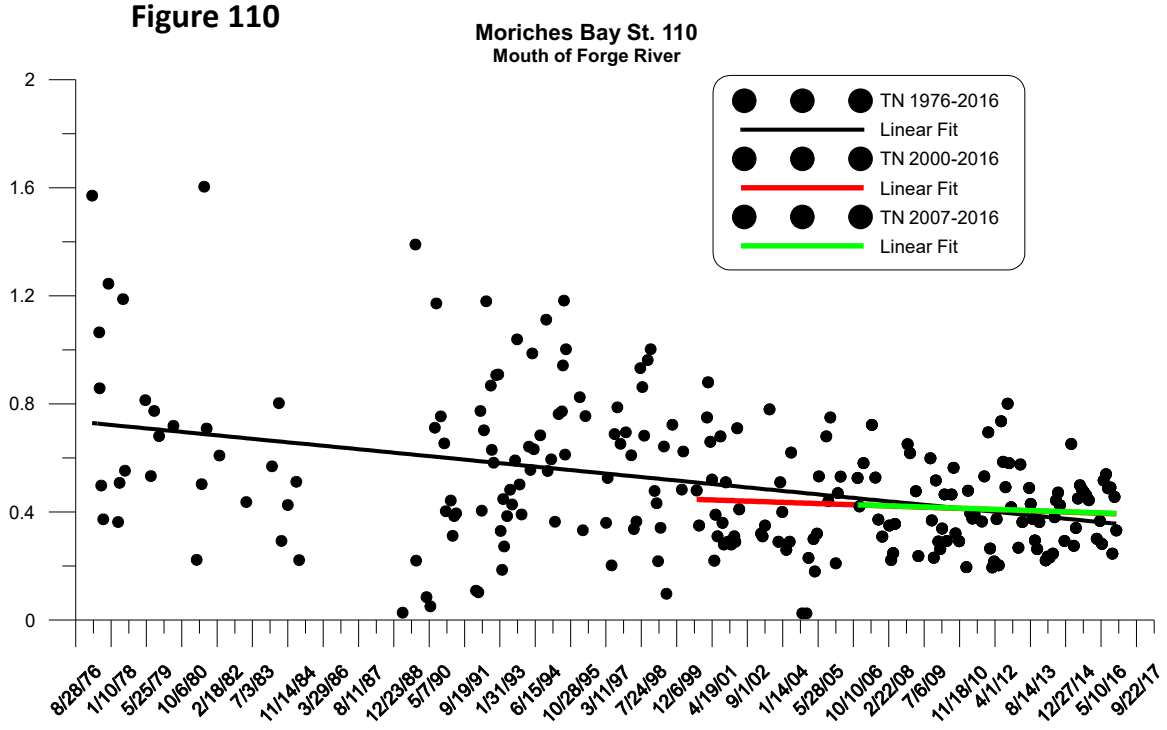
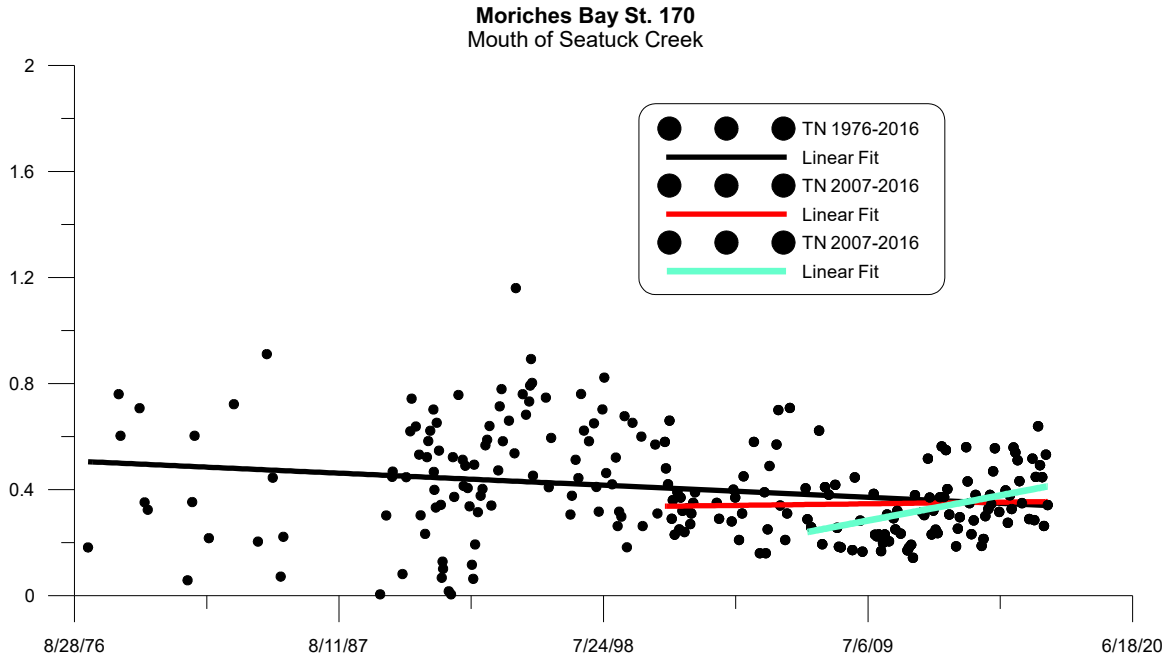


Figure 170



In addition, the three SWP graphs (***Figures 3-41**, **3-42** and **3-43)*** do not show their source and only show data up until 1997; where are the last twenty years of data? It is reported in the SWP (see Figure 1-5i above) that nitrogen levels in the sewered area have risen in the last ten years? Why hasn't this data been shown? In any event, **the SWP has not demonstrated a scientifically sound conclusion that sewers reduced ammonia concentrations in the adjacent *streams*; or if it had done so, that it was actually a beneficial effect.**

This DGEIS/SWP conclusion, as it relates to the benefit of sewering, should be removed from the DGEIS. **Instead, a list of the harmful effects of sewering should be included.** [Policy Report, page 8, *What's wrong with past sewage disposal policies?]*

1.3.3 Natural Environment

Statement: *In fact, implementation of the Proposed Action is projected to result in groundwater and surface water quality improvements that would support improvements to the associated natural environment.* ***Excess nitrogen has been linked****, for example, to water quality issues resulting in increased chlorophyll-a and reduced water clarity, storm-surge protection provided by coastal wetlands and aquatic vegetation, and an overall increase in the number of HABs.*

Comment: This statement is misleading. It implies that nitrogen from conventional sewage disposal systems are having a detrimental effect on the natural environment and that the Proposed Action Plan (basically sewering and using I/A OWTS) will resolve the mentioned "*water quality issues*". Since the focus of the SWP is sewage disposal and the elimination of conventional sewage disposal systems (OSDS), it is important to define the source of the "***excess nitrogen***" in the statement; which was not done. As we have discussed, nitrogen from sewage disposal systems has not been shown to cause *"water quality issues resulting in increased chlorophyll-a and reduced water clarity, storm-surge protection provided by coastal wetlands and aquatic vegetation, and an overall increase in the number of HABs."* The SWP uses the word **"linked"** in the statement. This word is used throughout the DGEIS and the SWP and does not mean caused. Linked is a word that is used to imply a connection, where no direct cause can be proven; unfortunately, anything can be "linked" using a computer model, if the assumptions are changed accordingly. As previously discussed under "Conclusion #9, **the reduction of nitrogen by the Proposed Action will more likely have harmful effects and a negative impact on the clam industry and other ecological endpoints.**

1.3.5 Noise and Odors

Statement: *The Proposed Action is not anticipated to result in significant adverse noise or odor impacts. s.* [Typo] *Noise complaints have not been raised by residents currently utilizing I/A OWTS, nor have odor complaints been logged. Modified Appendix A systems and STPs would continue to be required to meet the requirements of the local municipal code as well as those standards established by the County*.

Comment: The statement indicates that impacts are not "*anticipated*"; however, it does not state that there will be none. The noise analysis of the I/A OWTSs appears to depend upon the raising of complaints by "residents" in the pilot programs, how about neighbors? Was a noise study done, taking into account the ambient noise levels at night in different neighborhoods? It is also interesting to note that the statement does not say that there are no odor problems, but rather states, "*nor have odor complaints been logged".* Were there odor problems and no one wrote them down? It is common knowledge that I/A OWTSs have odor problems; especially when they are not

functioning properly, creating septic odors. Noise is a potential **negative impact** with no supporting data to show otherwise.

1.3.5.1 Noise

Statement: *Any major facilities or projects proposed in the future, such as sewer expansion projects, new Appendix A STPs, or individual/specific clustering projects, are subject to project-specific environmental review that would include consideration of potential noise effects. The proposed revisions to Appendix A of the Standards for Approval of Plans and Construction for Sewage Disposal Systems for Other than Single Family Residences require that noise control is included in the design of Appendix A STPs to qualify for reduced setbacks.*

Consequently, the Proposed Action would not result in substantial changes to noise levels at receptors in the County and would not result in significant adverse noise impacts.

Comment: The SWP proposes to allow STPs to be located closer to neighbors, depending on the "*project-specific environmental review*" to "*consider noise effects*". The problem with depending on an "*environmental review*" (known as SEQRA), is that the SCDHS will only do a perfunctory review. The reality is, if the project meets SCDHS standards (which will now include relaxed separations distances to STPs), the SCDHS will probably only require a short environmental assessment form or accept a lead agency determination as fulfillment of their "environmental review" responsibilities. The SCDHS will not reach out to affected neighbors, who may be impacted by noise or ask for a noise study, which should include existing ambient noise levels and the possibility of vibration effects. The assumption is, that if the project meets standards, then there is no impact; this is flawed logic. What noise studies have been done to justify the changes in Appendix A; which allows STPs to be closer to "*receptors*"? What are "receptors"? Are they People? Noise control is best handled by increased distances coupled with suppression. These changes should not be permitted until it is proven that noise will not be an issue. Making the changes on the basis that some future "environmental review" may prove it to be a correct decision, is not sufficient nor good engineering practice. The DGEIS statement should be:

Consequently, the Proposed Action may result in substantial changes to noise levels at receptors in the County and may result in significant adverse noise impacts (negative impact).

1.3.5.2 Odors

Statement: *Wastewater treatment in general has been identified as a potential source of noticeable offsite odors. As part of the Proposed Action, I/A OWTS would replace an OSDS that consists of a septic tank, leaching structures, and does not have active or mechanical means of treatment or supplemental filtering. I/A OWTS would be installed below ground similar to that of a traditional onsite wastewater disposal system. The I/A OWTS would not result in new odor sources.*

The proposed revisions to Appendix A of the Standards for Approval of Plans and Construction for Sewage Disposal Systems for Other than Single Family Residences require odor reduction be implemented into the design of Appendix A STPs to qualify for reduced setbacks. Site specific projects would be the subject of local review and approval. STPs, new sewer districts, or sewer district expansions would also be the subject of their own environmental review (ex. SEQRA) where the potential for odors would be evaluated. Therefore, the Proposed Action is not anticipated to result in odors noticeable offsite and would not have the potential to cause significant adverse odor impacts.

Comment: The first paragraph of this statement is basically a comparison of conventional onsite sewage disposal systems (OSDS) to Innovative and Advanced Onsite Wastewater Treatment Systems (I/A OWTS), in respect to the potential for impacts from odors. Any odors would be the result of gases produced primarily from the "digestion process" associated with sewage treatment. In the case of conventional sewage disposal systems, odors are only detected when the system "fails" or is improperly installed. The conventional system is designed to have no direct discharge into the atmosphere. The system operates primarily in an anaerobic environment until the treated wastewater enters the biologically active zone at the wastewater to soil interface, this area is semi-saturated and supports both anaerobic and aerobic treatment. Any noticeable odors from gases that are produced in the conventional system's treatment process are retained below ground. In a properly working and maintained conventional system, any gases that work their way to the surface through the overlaying soil are not noticeable.

On the other hand, the I/A OWTSs depend on active aeration in the treatment process. This process produces gases that are more directly vented into the atmosphere. In its conclusion, SWP states that "*The I/A OWTS would not result in new odor sources.*" This statement is misleading. Although the wastewater is not a "new odor source", the I/A OWTS treatment of the wastewater produces gases, which are vented to and discharged into the atmosphere; this is substantially different than what the conventional system does. The potential for odors is much greater and has been a problem, especially if the system is not working properly. Now picture 380,000 I/A OWTS systems all aerating their wastewater and discharging the gases into the neighboring atmosphere. Common sense alone tells us there will be a significant impact; and this is why conventional septic systems are not permitted to directly discharge their gases into the atmosphere. The SWP conclusion that "*The I/A OWTS would not result in new odor sources.*" is incorrect and should state:

The I/A OWTS will result in new odor sources (potential negative impact).

1.3.6 Human Health (Contaminant Exposure/Hazardous Materials)

Statement: *The installation and use of I/A OWTS units does not require the use or storage of chemicals or other hazardous materials. The flow discharged from the units is not considered hazardous and proper operation of the systems would not result in a potential negative impact on human health.*

Comment: This statement, besides applying to I/A OWTS, also can also be applied to conventional sewage disposal systems. *The flow discharged from* conventional systems *is not considered hazardous and proper operation of the systems would not result in a potential negative impact on human health.* The omission of conventional systems as a strategy option highlights the fact that the DGEIS and the SWP have disregarded a fair and balanced review of the conventional sewage disposal system, going out of its way to paint a negative picture of the most cost-effective and practical method for disposing of sewage in Suffolk County. The conclusion should be:

The flows discharged from OSDS and I/A OWTS are not considered hazardous and proper operation of the systems would not result in a potential negative impact on human health.

Statement: *Instead, upgrading of failed systems and old/grandfathered systems is expected to result in increased separation of the system to the groundwater table and reduced failures which in turn results in less human health hazards associated with exposures to sewage and potential physical harm from a collapsed system. Chemicals and/or hazardous materials that were previously known to be disposed of in OSDS would need to be assessed and remediated in accordance with SCDHS's 'action*

levels' stated in the SCDHS Standard Operating Procedure for the Administration of Article 12 of the Suffolk County Sanitary Code (Article 12 - SOP #9-95).

Comment: This statement ignores the benefits of "upgrading" conventional systems to conventional standards. The benefits mentioned here for I/A OWTS are the same for conventional systems (*increased separation of the system to the groundwater table and reduced failures which in turn results in less human health hazards associated with exposures to sewage and potential physical harm from a collapsed system*). Once again, the SWP ignores the conventional system option. The following conclusion should be added to the SWP and DGEIS:

Upgrading of failed systems and old/grandfathered systems with new conventional systems built to conventional standards will result in increased separation of the system to the groundwater table and reduced failures which in turn results in less human health hazards associated with exposures to sewage and potential physical harm from a collapsed system.

Statement: *Reduction in total nitrogen loading to surface waters and groundwaters (improvement in water quality) would have a positive impact on water quality that can result in an improvement in human health.*

Comment: This statement implies that there is something wrong with the health of the residents in Suffolk County that installing sewers or I/A OWTSs will resolve. The SWP does not describe any diseases or abnormalities that reducing nitrogen will cure ("improve human health"?). This is an illogical and unfounded statement and should be removed from the SWP. This is an example of the SWP making false claims to bolster its preconceived goals of sewering and increasing population densities. No one is ill from nitrogen poisoning and in fact the nitrogen levels in groundwater are acceptable. This SWP conclusion should be removed from DGEIS and a more appropriate statement, if necessary would be:

Reduction in total nitrogen loading to surface waters and groundwaters (improvement in water quality) has not been shown to have an impact on water quality that will result in an improvement in human health.

Statement: *For example, reduced nitrogen concentrations should result in a reduction in the number and intensity of HAB events on a Countywide basis, which would result in reduced HABs related toxins within shellfish and therefore increased protection of human health*.

Comment: As already discussed, decreasing nitrogen loading from sewage disposal systems has not been proven to prevent HABS. Although the SWP states that "…*reduced nitrogen concentrations* ***should*** *result in a reduction in the number and intensity of HAB events on a Countywide basis…",* it has provided no hard evidence that it will. Instead it has speculated with the use of computer models that are based upon unfounded assumptions. Also as discussed the reductions in nitrogen loading to the estuaries, such as the Great South Bay have not had a beneficial effect and may be the cause of the reductions in clam populations and the increase in harmful algae blooms. [See discussion in this report under "Conclusion #9]

The following statement should be added to the SWP:

It has not been proven that reduced nitrogen concentrations will result in a reduction in the number and intensity of HAB events on a Countywide basis; nor would it result in reduced HAB's related toxins within shellfish or increased protection of human health.

1.3.9.1 Water Export/Impact to Water Supply

Statement: *Diversion of sanitary wastewater effluent from existing OSDS within the presumptive sewer project areas to off-shore surface waters was determined to result in an insignificant reduction in groundwater recharge and would have no impact on the ability to provide the approximately 245 MGD of potable supply used Countywide on a daily basis.*

Comment: This is an example of how Suffolk County has not learned from the past. **The discharge of our water supply into the coastal waters is a strategy doomed for failure.** Can we really afford to continue expanding the existing sewer district discharges to the coastal waters? If history tells us anything, the answer is no. Of the eight presumptive sewer projects listed in the SWP (section 4.5.2), it appears that only two will be recharging the treated water back into the aquifer; the others will be discharging to coastal waters. This is the same trap that Queens and Nassau County fell into. Queens ran out of water thanks to their discharge through their sewers and treatment plants and Nassau is now facing a water crisis and will be looking for water from Suffolk. This is explained in our May 18, 2018 review of the 2017 LICAP report. [See LICAP Report Review]. Besides running out of water, Nassau County is experiencing the impacts of lowered water tables on the environment, including a reduction in stream flow, loss of surface water features and ecosystems that depend on them, reduction in coastal discharge, change in bay salinity, shifts in contaminant migration paths, a shift in the saltwater interface and the potential for saltwater intrusion, change in recharge zone boundaries and the rate of groundwater flow. [See LICAP Report Review, pgs. 3-6]. The question here is not whether we have the *"ability to provide the approximately 245 MGD of potable supply used Countywide on a daily basis",* but whether it is wise to continue expanding the water usage while increasing the amount we waste by discharging into the coastal waters. The SWP promotes connecting more areas to the SWSD and discharging the water into the Atlantic Ocean as stated in the SWP:

. *"…. the adjacent SWSD provides a significant benefit towards achieving load reduction goals since the outfall for the SWSD discharges to the Atlantic Ocean._In essence, 100 percent of the wastewater nitrogen emanating from parcels connected to the SWSD is removed from the Great South Bay subwatershed."* [ES-64}

This also means 100% of the treated water is discharged and not recharged to the aquifer. There are certain conditions that might require the hook up to an existing coastal outfall district, but being next to it is not one of them. [See Policy Report page 3]

In addition to the loss of water, the extension of such districts increases the population densities causing an impact on services and infrastructure. Although the SWP assures us that the the sewers will not have such an effect, reality tells us different; one only has to look at western Long Island to see the impact of unbridled development spurred on by sewers. The DGEIS turns a blind eye to this phenomenon and should declare it as a **negative impact**, as it affects what is left of the rural way of life in Suffolk County.

The DGEIS should require the SWP to address this and recommend a policy that prevents additional expansion of wastewater input, both from within and outside the coastal outfall sewer districts.

Statement: *It is important to note that SCDHS Guidance Memorandum #28 (July 24, 2017) provides the requirements necessary for siting proposed or expanded STPs to determine potential impact to drinking water supplies. Changes/modification to these guidance requirements are not proposed.*

Individual sewering projects would as part of the environmental review process evaluate the potential negative effect to local surface water baseflow.

Comments: This statement implies that the SCDHS will take action to stop expansion of STPs which are determined to have a negative impact to drinking water supplies. However, this *Guidance Memorandum #28* does nothing to prevent the continued expansion of the sewer districts that have coastal outfalls that discharge millions of gallons of treated water into coastal waters. How many times has SCDHS taken action to prevent expansion of sewer districts that discharge into the coastal waters? How many times has SCDHS prevented the expansion of STPs that discharge into coastal waters? If any, what are examples of the cases in which SCDHSs prevented such expansions of discharge? The SWP falls short by not establishing a policy that prevents further **increases in discharge and reductions in recharge** or requiring SCDHS to take action in this respect. It does nothing to prevent expansions of uses (increase in wastewater flows within the districts), which result in increased discharges by default. As a result, enactment of "*The Proposed Action"* sets the stage for further impacts on the groundwater supply and reduction in base flow. Impacts have already been documented in the Southwest Sewer District area, which is now approved for a 40 MGD discharge.

The SWP should recognize that the use of such Memorandums constitute a non-binding and ineffective approach to managing the STPs and their potential increases of discharges to coastal waters. The DGEIS should have concluded that the Proposed Action and the proposed expansion of such sewer districts will have a negative impact on the groundwater.

Presumptive Sewering Projects, Sewering and Clustered/Decentralized Recommendations

Statement: *The identification of STPs and clustered/decentralized systems as an effective tool in addressing nitrogen from sanitary wastewater would support growth approved by a local municipality but would not be growth inducing on its own.*

Comment: This statement does not make sense as written. How does identifying STP's support growth? Did the SWP mean constructing or connecting to them would have an impact? In any event, for the SWP to ignore the negative impacts that such infrastructure projects have on a community's way of life is disingenuous and not in touch with reality; one only has to look at the Town of Babylon and how its zoning broke down and sprawl took over after the SWSD was built. By deferring protection of our water supply to individual zoning boards, the SWP is signing the death warrant for our water supply. As previously discussed, the real goal of the SWP is to promote economic development, and the real tool to do this is nitrogen. The nitrogen "problem" has been exaggerated to scare the public into voting and paying for sewers. [Policy Report, pages 8-10]

The DGEIS should have declared sewering to coastal outfalls result in a negative impact.

The DGEIS should have determined that leaving the fate of our water supply in the hands of zoning boards would result in a negative impact.

1.3.10 Unavoidable Adverse Impacts

Statement: *The Proposed Action does not include the development nor require the development of a physical project.*

Comment: The purpose of this statement in this section of the DGEIS (Unavoidable Adverse

Impacts) is not clear. It implies that *The Proposed Action* does not involve any construction *(development) of a physical project* and therefore is released from scrutiny for *adverse impacts*. *The Proposed Action* involves the development of a plan, which will eventually result in construction of over 380,000 sewage disposal systems, including STPs, sewers and onsite wastewater treatment systems. Obviously, ***The Proposed Action* is not exempt from scrutiny under SEQRA. This statement is misleading and should be removed**.

Statement: *The changes to the Sanitary Code and Appendix A requirements are proposed to address water quality impacts associated with nitrogen loading from existing onsite wastewater disposal systems (OSDS).*

Comment: This statement avoids the fact that the primary purpose of *The Proposed Action* (which is downplayed in the SWP) is to foster economic development, including creating jobs and opening land for more intense development. This goal has been widely touted in many public meetings and forums, but interestingly, not in the SWP. Is it because the County does not want the SWP to be related to increasing population densities and urban sprawl, which would not be popular with the general public?

The DGEIS should focus on the issue of economic development and urban sprawl and include a full analysis of its positive and negative impacts.

1.3.11 Irreversible and Irretrievable Commitment of Resources

Statement: *Under the Proposed Action, natural and man-made resources would be expended. For example, resources would be needed in the manufacturing and installation of the approved I/A OWTS. The commitment of the resources required (such as metal and plastic) to construct the I/A OWTS unit would result in those resources not being available for other uses.*

Resources such as land, construction materials, and human effort to design, install, monitor and maintain the STP would be required. The analysis of the specific commitment of resources associated with individual STP or clustered/decentralized projects would likely be addressed in a project specific environmental review (i.e. project specific SEQRA review). One would expect that resources such as land for a project site, equipment, labor, and energy would be required for individual STP or cluster/ decentralized projects. Operation of a STP would also include a commitment of energy. **These project commitment of resources would be the same with or without the implementation of the Proposed Action.**

Comment: This statement concludes that the "*commitment of resources would be the same with or without the implementation of the Proposed Action.*" This is incorrect because the SWP and DGEIS do not consider the option of using conventional onsite sewage disposal systems in the plan or analysis. As previously discussed, considering the benefits of using conventional systems, there would be less resources necessary to treat wastewater. The statement that *resources would be the same with or without the implementation of the Proposed Action* should be corrected. The conclusion should be:

These project commitments of resources will be higher with the implementation of the Proposed Action and resultantly have a potential negative impact.

The DGEIS and SWP should include the option of using conventional sewage disposal systems in its analysis and as part of the Proposed Action to mitigate impacts.

1.3.12 Mitigative Measures

Statement: *The implementation of a Countywide wastewater management plan would result in the reduction in nitrogen loading from wastewater sources so as to protect and restore both groundwater and surface water quality and the coastal ecosystems of Suffolk County. Water quality improvement is a beneficial outcome of the Proposed Action and does not require mitigative measure*.

Comment: As already discussed, the SWP will not achieve its goal, *"to protect and restore both groundwater and surface water quality and the coastal ecosystems of Suffolk County",* by focusing on nitrogen reductions. Neither the DGEIS nor SWP have identified what aspects of groundwater, surface water or coastal systems will be "restored" by nitrogen reduction; and ignore the fact that starving the surface waters of nitrogen will likely have a **negative impact**. Restoration for surface water **may require raising the nitrogen loading** to some previous level where clams, in particular, thrived (clams need nutrients). Rather the goal appears to be nitrogen reduction in and of itself, with no discernible ecological endpoints. With the implementation of the SWP, mitigative measures are necessary due to the economic impact the SWP will have on the residents and the commitment to the use of unnecessary resources. Such commitment to resources is not warranted, considering the lack of cause and effect due to nitrogen. As previously discussed, the water quality (as far as nitrogen is concerned) is acceptable, and the "nitrogen problem" has been exaggerated to achieve other financial goals, such as grants and federal funds. **To the contrary, the Proposed Action will not end up as an improvement, but rather as having a negative impact**.

Statement: *Several wastewater management technologies were evaluated to address nitrogen loading from OSDS. While the recommendations within the SC SWP focus on the use of I/A OWTS as the primary wastewater management strategy, initial recommendations for other management methods, including sewer expansion, and clustering/decentralized systems are also provided (but would require follow up study and project-specific feasibility analysis before final recommendations can be provided).*

Comment: This statement points out the fact that the SWP did not address conventional onsite sewage disposal systems as part of the plan. Looking at the SWP, no in depth analysis of conventional systems was done. No studies of how the systems work or how they can be improved were presented. In fact, as part of the wastewater planning, in-depth studies were proposed, but never carried out. Instead the County moved ahead with the SWP, not knowing the true nitrogen loading and treatment processes (including denitrification) that the conventional systems were capable of. As a result, the nitrogen loading models are flawed and the conclusions incorrect. Without conventional systems being part of the wastewater strategy **negative impacts** will occur.

1.4 Alternatives Analysis

Statement: *Five alternatives to the Proposed Action were identified during project Scoping and evaluated in this Draft GEIS.*

Comment: The problem with the five alternatives presented is that none of them include the use of conventional systems as part of the strategy. As already discussed, the conventional systems have benefits over other methods of sewage disposal that have not been addressed in the SWP or the DGEIS; without conventional systems being part of the wastewater strategy **negative impacts** will occur. The Comprehensive Groundwater Plan also indicated that the conventional systems were effectively protecting the groundwater under Article 6. [See Policy Report, pages 4 – 6 & 10]

2.2.5.3.1 Preliminary Identification of Subwatersheds with Potential Sanitary Impacts (SWP)

Statement: *This preliminary evaluation provides an initial identification of pathogen-impacted waters that could potentially be caused by on-site disposal of sanitary wastewater based on the presence of residential land use within the area where the depth to groundwater is less than 10 feet.*

Comment: This entire section is speculative and provides no evidence that conventional sewage disposal systems are the source of any pathogens found in surface waters. Pathogens were found in both areas that are serviced by sewered and by conventional systems; and there is no cause and effect. Anyone familiar with the functioning of conventional systems realize that the pathogens excreted from warm blooded animals (such as humans) do not survive long in the harsh conditions outside the human body (This is confirmed in section 2.2.5.4.1 of the SWP). The SWP has sampled water bodies and found pathogens that they have been able to relate to human origins. However, this does not confirm that conventional sewage disposal systems are the source of the pathogens. To prove this, the SWP would have had to study existing sewage disposal systems and track the effluent plumes for pathogens here on Long Island. The SWP did no such study. If it had, it would have found that the pathogens were destroyed before they reached groundwater or surface waters. This is evidenced by the lack of pathogens showing up in our groundwater supply, which has been replenished by the effluent of septic systems (including outhouses), since the colonists first occupied Long Island. The only time we see pathogens is when the water supply wells or distribution systems are compromised by direct outside influences (such as bird populations in water storage tanks or improper sanitary seals that allow runoff to enter well casings). Rather than speculate on something that is most probably not true, **the SWP should conclude that it is highly unlikely that properly functioning sewage disposal systems are causing pathogens in surface waters (or groundwater supplies).**

Furthermore, this statement, along with others in the SWP, make the assumption that conventional sewage disposal systems, located in areas with less than 10 feet to groundwater, provide less wastewater treatment than other areas. The SWP provides no evidence of this, other than it expects the detention time of the effluent plume to be less in these areas. In fact, because of the presence of black peat in most of these coastal areas (as discussed under Conclusion #2) the detention time is expected to be greater [See Liu and Young Report]. Regardless of the detention time, these areas actually provide the best opportunity for natural denitrification to occur. In addition, the SWP has provided no evidence that pathogens have any better survival rate in these areas. Since this was one of the primary assumptions used in determining the "priority" areas for advanced wastewater treatment; the priority areas no longer become priority, if nitrogen is reduced and pathogens are not present in the groundwater base flow. **Unnecessarily designating areas with less than 10 feet to groundwater as priority areas creates a negative impact on homeowners in those areas.**

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Link to Another List of References [List of References]

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Water Resource Planner

What's Wrong with the SWP?

A Guide to Comments in the DGEIS/SWP Review Document-Phase 1 Comments dated September 4, 2019

(Available at: http://tiny.cc/SWPreview)

All the nitrogen loading calculations and conclusions used in the SWP are in question. (pages 5-9)

- Contrary to the SWP's statement, conventional Onsite Sewage Disposal Systems (OSDSs) are designed to treat wastewater and to remove nitrogen. (page 5)
- The SWP skewed results and conclusions and exaggerated nitrogen loading from conventional sewage disposal systems. (pages 6-9)
- Naturally occurring denitrification in coastal areas were ignored or underrated in the SWP. (page 7)
- The SWP has given no evidence that empirical studies have been done on existing conventional sewage disposal systems that would justify the nitrogen reduction assumptions used in the computer modeling. (page 9)

The SWP does not offer a practical, cost-effective or short term strategy to deal with the immediate problem of failed sewage disposal systems. (pages 10-13)

- Some of the strategies being presented by the SWP will be harmful in both the long and short run. (page 11)
- The SWP fails to recognize conventional systems as a viable strategy resulting in a negative impact. (page 11)
- The SWP needs to address more cost effective and practical help for homeowners with pre-existing OSDSs. (page 12)
- The SWP sewering strategy will have a **negative impact** (page 12)
- The "Proposed Action", as is, will have a negative impact on the quality of life, safety and public health of the residents of Suffolk County. (pages 11-12)

What is really causing harmful algae blooms? (pages 12-18)

- The SWP makes no attempt to consider the nutritional needs of our bays. (page 12)
- The Plan distanced itself from the ecosystem that the Public believes will somehow be nurtured (page 13)

- The SWP strategy for the control of harmful algae is to simply starve them of nitrogen. (page 15)
- It is under low nitrogen conditions that HABs have shown competitive advantages over other algae. (page 15)
- If we further reduce the nitrogen loading to our bay, we will decrease shellfish populations, increase the effect of intermittent nitrogen loadings and increase the potential for HABs. (page 15)
- "Successful" nitrogen reductions have not yielded the expected results. (page 15)
- Sewer systems have upset the nutrient balance to favor Brown Tides. (page 16)
- HABs are predominately associated with those water bodies that have the lowest nitrogen loadings (page 17)
- Brown Tide blooms occur when inorganic nitrogen levels are low (page 17)
- High nutrient concentrations resulted in healthy shellfish populations (page 17)
- High nutrient concentrations have resulted in healthy shellfish populations. (page 17)

The SWP misportrays the water quality in Suffolk County with "sobering statistics". (pages 20-25)

- The SWP incorrectly paints a grim picture of water quality in Suffolk County by using selected statistics. (page 20)
- It appears that the SWP's choice to lump together sampling station data, has presented a misportrayal of the nitrogen concentrations in the Great South Bay; and masked the existing low concentrations of nitrogen in the bay. (page 20-24)
- The SWP's claim that the Southwest Sewer District lowered ammonia concentrations in selected streams has not been scientifically proven. (page 23)

Other Impacts (pages 25-34)

- The SWP does not adequately address noise and odors resulting from the implementation of the "*Proposed Action*". (pages 25-28)
- Reduction in total nitrogen loading to surface waters and groundwaters has not been shown to have an impact on water quality that will result in an

improvement in human health. (page 28)

- Upgrading of failed systems and old/grandfathered systems with new conventional systems built to conventional standards will result in increased separation of the system to the groundwater table and reduced failures which in turn results in less human health hazards associated with exposures to sewage and potential physical harm from a collapsed system. (page 28)
- It has not been proven that reduced nitrogen concentrations will result in a reduction in the number and intensity of HAB events on a countywide basis; nor would it result in reduced HAB's related toxins within shellfish or increased protection of human health. (page 28)
- The SWP strategy of "diverting" our water supply into coastal waters through sewage treatment plant outfalls is a strategy doomed for failure. (page 29)
- The DGEIS should recommend a policy that prevents additional expansion of wastewater flows, both from within and outside the coastal outfall sewer districts; so as to prevent negative impacts on the water supply. (page 29)
- The DGEIS should have declared that sewering to coastal outfalls would result in a negative impact. (page 30)
- The DGEIS should have determined that leaving the fate of the water supply in the hands of zoning boards would result in a negative impact. (page 30)
- The commitment of resources will be higher with the implementation of the Proposed Action and resultantly have a potential negative impact. (page 31)
- The DGEIS and SWP should include the option of using conventional sewage disposal systems in its analysis and as part of the *Proposed Action* to mitigate negative impacts. (page 31)
- The SWP provides no evidence that conventional sewage disposal systems are the source of any pathogens found in surface waters. (page 33)

Electronic copy of this document and SWP Comments at: http://tiny.cc/SWPreviews

From:
Sent: Wednesday, September 18, 2019 12:27 PM
To:
Subject: FW: SUBWATERSHEDS WASTEWATER PLAN

From: Zegel, Ken
Sent: Wednesday, September 18, 2019 12:21 PM
To: Caniano, Anthony
Subject: FW: SUBWATERSHEDS WASTEWATER PLAN

From: tymforruth@aol.com [mailto:tymforruth@aol.com]
Sent: Tuesday, September 17, 2019 8:09 PM
To: Zegel, Ken <Ken.Zegel@suffolkcountyny.gov>
Subject: Fwd: SUBWATERSHEDS WASTEWATER PLAN

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-----Original Message-----
From: tymforruth <tymforruth@aol.com>
To: ken.zegel <ken.zegel@suffolkcounty.gov>
Sent: Fri, Sep 13, 2019 11:32 pm
Subject: SUBWATERSHEDS WASTEWATER PLAN

Dear Mr. Zegel,

This is just another scheme to milk us dry for an overpriced, unproven, feel good scheme, that will cost us more money we don't have. Not unlike our cesspool boondoggle for those who would bankrupt its citizens for more unproven costly nonsense! How much more are we to take? Red light cameras, Cuomo's grants for high density housing, that clear cuts our trees, while giving tax abatements for years and grants, claiming need for affordable housing, what a joke @ $2,000/mo for a 1 bedroom! Then to add insult to injury, cut more trees down for solar farms and grant high density housing that drains our aquifers and adds to the effluent problems; and you want us to believe they care about the environment? Who is getting all our money, which gets handed out in grants and higher taxes? Grants are not free money! It is our taxpayer money! Grant money, that is a misnomer!" "The county hasn't proven that sewers or advanced systems have improved water quality in areas where they have been installed. The focus on nitrogen would ALLOW MORE DEVELOPMENT AND LEAD TO A DEPLETED AQUIFER."

Sincerely,

Ruth Andrews
Pt Jeff Sta, NY

Save the Sound®

October 8, 2019

Ken Zegel, PE
Associate Public Health Engineer
Suffolk County Department of Health Services
Office of Ecology
360 Yaphank Avenue, Suite 2B
Yaphank, NY 11980
Via Email: ken.zegel@suffolkcountyny.gov

Re: Save the Sound Comments on the Suffolk County Subwatersheds Wastewater Plan and Draft Generic Environmental Impact Statement

Dear Mr. Zegel,

On behalf of Save the Sound, a 501(c)(3) non-profit corporation dedicated to protecting and restoring Long Island Sound and its tributary waterways, please accept these comments expressing our strong support for the Suffolk County Subwatersheds Wastewater Plan (SWP) and Draft Generic Environmental Impact Statement (DGEIS).

Background

Excess nitrogen (nitrogen pollution) entering the groundwater and coastal waters of Long Island is widely known to be a serious threat to the health of the inhabitants of the island both human and animal. It is already costing Long Island residents and businesses by degrading ecosystems, contaminating drinking water supplies, reducing coastal resiliency and harming the local economy. Sources of nitrogen pollution include septic systems, cesspools, wastewater treatment plants, polluted storm water runoff, and residential and agricultural fertilizers. Before recovery from damage already done can start, all of these sources must be addressed with a coordinated and timely strategy, such as the Subwatersheds Wastewater Plan.

The U.S. Environmental Protection Agency (EPA) region 1 and 2 released an updated strategy to reduce nitrogen inputs to Long Island Sound in December of 2015. This strategy specifically directed New York State and Connecticut to assess the local nitrogen loading in the bays, harbors and coves of Long Island Sound, and to set location-specific endpoints for nitrogen in locations found to be suffering from excess nitrogen. In 2016, the New York State Department of Environmental Conservation (DEC) released the Long Island Nitrogen Action Plan (LINAP) which provides a roadmap to reduce nitrogen that is consistent with the actions in the SWP. Together these plans show broad-based consensus on the federal, state and local level that nitrogen pollution is a very serious threat that warrants the coordinated, long term actions and investment contained in the SWP.

Save the Sound®

Support for the Suffolk County Subwatersheds Wastewater Plan
Save the Sound strongly supports the SWP and the DGEIS. We feel the SWP provides an urgently needed countywide strategy to tackle nitrogen pollution in Long Island's surface waters and groundwater. Specifically, the plan 1) provides a wastewater management strategy to reduce nitrogen pollution from point and non-point wastewater sources, 2) will drive the development of strategies to address nitrogen from non-wastewater sources by identifying waterbodies where additional mitigation measures may be required to restore water quality, 3) supports policymakers and stakeholders in making informed decisions on best management practices that address both types of source pollution, and 4) meets the goals set out in the EPA Nitrogen Strategy, NYS Long Island Nitrogen Action Plan, and the county's Reclaim Our Water initiatives.

Robust scientific research, supported by pilot studies in the field, confirm that replacing aging cesspools and septic systems with new Innovate/Alternative Onsite Wastewater Treatment Systems will dramatically reduce nitrogen reaching the groundwater and surface waters. Upgrading treatment plants, expanding sewer districts, incorporating green infrastructure, and fertilizer use restrictions will also reduce nitrogen loads. We have the solutions to bring about the needed reductions, now we need the shared commitment, funding and political will to get those solutions implemented on a large scale in Suffolk County.

Under County Executive Bellone's leadership, and with the support of many partners and stakeholders, Suffolk County has been successful creating innovative funding mechanisms to start this work. Save the Sound strongly supports the goal of establishing a stable and recurring funding mechanism to make the advanced onsite systems or sewer connections affordable for homeowners. A dedicated funding stream has proven effective in long term water quality restoration efforts in other parts of the country, such as Chesapeake Bay and Puget Sound, and will be critical to sustain this effort on the scale needed over the 50 years of the plan.

Save the Sound strongly agrees with the inclusion of phosphorous reduction in the SWP and the goal of establishing ecological endpoints. Monitoring dissolved oxygen, chlorophyll-a, water clarity and algal blooms will establish the efficacy of site-specific nitrogen reduction efforts and allow for the refinement of those strategies as needed. We also agree with the integration of sea level rise and salinity data throughout the life cycle of the plan. Overall, we support the integrated approach detailed in the SWP which creates a solid scientific footing and allows for the flexibility needed to update strategies as more data and/or changing conditions are measured.

Save the Sound®

Recommendations

Based on our participation in the public hearings on September 5 and 6, 2019 we offer the following recommendations for your consideration:

- Address the impact on seniors selling their primary homes without having installed an Innovate/Alternative Onsite Wastewater Treatment Systems by providing access to grants to cover expenses at that time. a
- In the plan itself, clearly identify how towns and villages will be engaged in meeting the goals of the plan. b
- When presenting the Innovate/Alternative Onsite Wastewater Treatment Systems and the financing options for getting those installed, be sure to include the cost of maintenance on existing cesspools and onsite systems so homeowners do not have the misperception that their existing systems bare no costs. c
- Don't let perfect be the enemy of the good. Emphasize the iterative nature of the plan and the fact that the public and elected officials will have ongoing input as different aspects are rolled out. d

In conclusion, we appreciate County Executive Steve Bellone and his staff for their leadership on Reclaim Our Water and DEC staff for its leadership on LINAP. Together with the Subwatersheds Wastewater Plan, we believe fully and expeditiously implementing these initiatives are the key to solving Long Island's water quality crisis. We thank you for the opportunity to submit these comments on behalf of Save the Sound and our members.

Respectfully submitted,

Tracy Brown
Director
Save the Sound
tbrown@savethesound.org
914-574-7407

North Shore Baymen's Association for the Public Trust

North Shore Baymen's Association
62 Old Field Road
Huntington, New York 117~~3~~43

October 6th,2019

Ken Zegel, PE, Associate Public Health Engineer
Suffolk County Department of Health Services' Office of Ecology,
360 Yaphank Avenue, Suite 2B, Yaphank, NY 11980.

Subject: Comment on Suffolk County Subwatersheds Wastewater Management Plan, By Robert M. Wemyss

The management plan recommends using bioextraction by shellfish aquaculture based on the often-perpetuated mythology that shellfish mitigate nitrogen. This very unfortunate mythology has been forwarded to leverage public opinion in favor of expanding commercial shellfish aquaculture in public waters and against public trust principles. The work cited by the county fails to consider the fate of shellfish bio-deposition - feces and pseudo-feces.

The management plan document concludes that:

"it is clear that nutrient bioextraction using shellfish aquaculture compares favorably the other nitrogen mitigation measures."

This is a material misrepresentation of fact and does not represent the best available science on the subject. a

The primary source of these conclusions is research by Northeast Fisheries Science Center (Rose, 2015). The calculated nitrogen removal rates are based on very high stocking densities for shellfish species we do not culture in Suffolk County. Manila Clams in Samish Bay? Does the county even realize the impacts from dredging Manila clams in Venice Lagoon have caused a complete trophic shift (Pranovi, 2003)? More importantly nitrogen removal from bioextraction, which is just a euphemism for removing and selling the shellfish, is being looked at in a vacuum. Dr. Rose's work is political science, Dr. Julia Rose has been involved in other research that misrepresenting the impacts of shellfish aquaculture on the subject of substrate penetration of hydraulic shellfish dredge waterjets (Goldberg, 2014). The is a pattern with these researchers seeking to promote expansion of coastal shellfish aquaculture at the behest of commercial shellfish aquaculture while they avoid answering the hard questions about impacts.

The thesis that shellfish mitigate nitrogen has been debunked by research around the world and by researchers in the Chesapeake Bay who determined that bioextraction by shellfish does not appear to be a viable nitrogen mitigation strategy at all; in fact for oysters researcher concluded that oyster cultivation did not enhance nitrogen removal (Higgins, 2013). The same conclusion was made for hard clam farms "Ultimately clam sediments were found to be a significant source of nutrients to the water column whereas uncultivated sediments retained ammonium produced by microbial mineralization. Thus, clam cultivation may promote local eutrophication (i.e., increased primary production) by facilitating nutrient regeneration and retention of ammonium in the sediments (Murphy, 2015)." Researchers have recognized for more than 60-years that shellfish cultivation pollutes sediment in cultivated areas (ITO Susumu, 1955). Far from removing nitrogen shellfish cultivation recycles ammonium to the water at a higher rate as cultivation is intensified through the process of dissimilatory reduction of nitrogen to ammonium (DRNA).

The United State Army Corps of Engineers acknowledges in their review for the reissuance of the Nationwide Permits that "Large populations of the species raised through commercial shellfish aquaculture activities can increase in nutrients and other and pollutants in the water (USACOE, 2017)."

Cradle to Grave commercial shellfish aquaculture can be predicted to have the net effect of making more nitrogen available as a fuel for primary production. As a justification for intensification of commercial shellfish aquaculture activities bioextraction is a hoax. To consider the total amount nitrogen removed in the form of shellfish without accounting for the fate of shellfish waste is dishonest. The bioextraction averages in Dr. Rose work come from calculations extrapolated from very intense cultivation of species not native to New York and they entirely ignore; the shellfish waste and how it is recycled in the environment.

The County of Suffolk is ranking shellfish aquaculture as more efficient at nitrogen removal than stormwater remediation. It is difficult to express how crooked this is. Understandably removing nitrogen from stormwater may be an expensive proposition but infrastructure for removing nitrogen from stormwater would at the same time be dealing with the bacterial contamination in the stormwater which is what is closing our shellfish beds and beaches every time we have heavy rain. There

is a huge loss of value related to beach and shellfish bed closures.

There is also a push by the Suffolk County to permit seaweed cultivation the is another boondoggle to create an unnecessary industry to produce a product with a negative market value that takes up public space a place extensive gear in navigable waters.

Conclusion – Suffolk County should investigate its own motives for proposing shellfish aquaculture as a method for mitigating nitrogen when the overwhelming result of hands on research demonstrates that high concentrations of cultivated shellfish; pose a threat to water quality, invite the proliferation of diseases the effect both man and shellfish, and threaten genetic diversity of wild shellfish populations. The motives of shellfish hatchery owners seeking public funding for their own enrichment are clear. The motives of would be privatizers of natural shellfish habitat are clear. The motive of East Coast Shellfish Growers Association is also clear; to expand and intensify commercial shellfish aquaculture on the eastern seaboard by convincing the public that doing so is good for water quality and habitat. These claims are not supported by the best available science. For the county to fix a price on the cost of nitrogen removal by bioextraction based on disputed models proposed by industry is discussing. The county should remove any reference to the use of shellfish bioextraction and prioritize funding to address nitrogen and bacteria loading from stormwater.

Nutrient bioextraction as a management strategy to mitigate the effects of eutrophication is a fake.

Respectfully,

Robert M. Wemyss
Secretary NSBA

Works Cited

Duball, E. C. (2017). Environmental Impacts of Oyster Aquaculture on the Coastal Lagoons of Southern Rhode Island. University of Rhode Island DigitalCommons@URI.

Goldberg, J. M.-A. (2014, May 20). Effects of hydraulic dredging on the benthic ecology and sediment chemistry on a cultivated bed of the Northern quahog, Mercenaria mercenaria. *Aquaculture, 128-129*, 150-157.

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ITO Susumu, I. T. (1955). ECOLOGY OF OYSTER BED I. ON THE DECLINE OF PRODUCTIVITY DUE TO REPEATED CULTURES. *Tohoku journal of agricultural research, 5*(4), 251-268.

Murphy, A. E. (2015, November). Effects of commercial clam aquaculture on biogeochemical cycling in shallow coastal ecosystems. *Doctoral Dissertation*. Virginia: The College of William and Mary in Virginia.

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USACOE, A. C. (2017, January 6). *DECISION DOCUMENT NATIONWIDE PERMIT 48 Commercial Shellfish Aquculture.* Retrieved from USACOE: https://usace.contentdm.oclc.org/utils/getfile/collection/p16021coll7/id/6759

North Shore Baymen’ s Association for the Public Trust

North Shore Baymen’s Association, Huntington NY

October 6th,2019

Ken Zegel, PE, Associate Public Health Engineer
Suffolk County Department of Health Services’ Office of Ecology,
360 Yaphank Avenue, Suite 2B, Yaphank, NY 11980.

Subject: Comment on Suffolk County Subwatersheds Wastewater Management Plan, By Robert M. Wemyss

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Respectfully,

Robert M. Wemyss
Secretary NSBA

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Dear Mr. Zegel,

I would like to say that not all homes in all areas should have the proposed nitrogen-reducing system imposed upon them. a

First, there are many homes in the county that have been there long enough to be using a second cesspool and overflow cesspool. The original ones having been pumped and filled in. The original cesspool would have been installed fairly close to the foundation wall in a fairly straight line to the outflow pipe exiting the foundation. The replacement cesspool and overflow cesspool are now more distant from the foundation with perhaps less of a straight run for the waste line to these replacement cesspools.

If the new, proposed system is installed after filling in the two replacement cesspools, by necessity, it well need to be stell further away from the foundation outflow exit from the house. Please note that when these older houses were constructed, toilets had a 6 gallon flush tank carrying out the waste to the cesspool. Replacement toilets and toilets installed in new homes have a mere 1.2 gallon flush tank.

There is no way that a 1.2 gallon flush would have the velocity to carry heavy waste loads to what would be a tank location even further away from the foundations than cesspools one and two and their overflow cesspools. b

In addition, the waste line to the mandated

new devices may likely necessitate further curving the waste line to avoid mature trees' root systems. Not having a straight enough wasteline men will further slow down what started as a puny 1.2 gallon flush.

As waste material collects where it is being deposited, toilet lines would back up into the home frequently. This might especially be noticed if accumulating waste material "dried out" from a period of weeks away from home when water was not flowing through the line.

Second, the main cause of rising nitrogen levels and its effect upon waterways is not cesspools. Rather, it is due to the tons of nitrogen-containing products for lawns and other purposes. Also, animal waste, especially canine-related is constantly being deposited into any bodies of water which receive road water runoff.

c

If this nitrogen reducing equipment is mandated and toilet line blockages become a frequent occurence, the elected officials who voted for and supported this "one shoe fits all" mandated and expensive system will have a huge number of angry voters of both political parties and independent voters as well.

d

I strongly urge the planners and supporters of this proposed system to carefully think about all of the possible negative ramifications before mandating this system upon the residents of Suffolk County.

Sincerely,

Harold Moskowitz

Harold Moskowitz
26 Glenview Avenue
Northport, N.Y. 11768-2427

Council on Environmental Quality (CEQ) October 12, 2019
Lawrence Swanson, Chairman
H. Lee Dennison Building
Hauppauge, NY 11788

Re: Comments on the Draft Generic Environmental Impact Statement (DGEIS) for the Subwatershed Wastewater Plan (SWP)

Dear Mr. Swanson and Council Members:

On behalf of our Group, I would like to take this opportunity to thank the CEQ for its efforts in reviewing the DGEIS and the SWP. In our September 4, 2019 DGEIS Comment Report ,we brought to your attention fundamental flaws in the DGEIS and SWP; and we would like to ensure that our concerns are understood and addressed.

It is our understanding that the CEQ is responsible to review the DGEIS for its accuracy and in so doing will identify any **negative impacts** caused by the implementation of the SWP. Furthermore, it is our understanding that the CEQ will direct the County to address all identified **negative impacts** through revisions to the SWP, prior to approval or implementation of the Plan.

For your edification, we have prepared the following list of concerns including the **negative impacts** that we believe have not been addressed by the DGEIS and the SWP. This list is complementary to our September 4, 2019 comments. We believe that the SWP can be modified to improve the plan and mitigate the **negative impacts**. The following is a summary of some primary **negative impacts** and flaws, which we have identified.

1. The SWP will cause the expansion of sewer districts in Suffolk County that discharge treated water into the coastal waters, which will result in negative impacts. Discharges into coastal waters have been shown to deplete groundwater by not recharging water back into the groundwater supply. As a result, the following environmental impacts can be expected: lowering of water table levels, reduction in stream flow, loss of surface water features and ecosystems that depend on them, reduction in coastal discharge, change in bay salinity, shifts in contaminant migration paths, a shift in the saltwater interface and the potential for saltwater intrusion, change in recharge zone boundaries and the rate of groundwater flow. Such expansions of districts and losses of water, when considered individually, do not appear to be of great environmental significance; but when considered cumulatively, they have a disastrous effect on the groundwater supply and estuaries. [LICAP Report Review, pg. 6] a

The DGEIS does not clearly identify these potential **negative impacts** or address the consequences. The SWP should be revised so as to discourage the expansion of sewer districts that discharge into coastal waters. Based upon past practice, it is obvious that these types of sewer districts have been allowed to expand without regard to their negative impacts. One only has to look to Nassau County to see the results of a lack of

controls; Nassau County has exceeded its sustainable yield and is running out of water; as its STP's discharge, uncontrollably, to coastal waters. Unless Suffolk County puts a stop to such expansions, negative impacts will overtake Suffolk County. Hopefully, the CEQ will **recommend through the DGEIS review process that revisions be made to the SWP to curtail expansion of sewer districts that discharge into the coastal waters.**

b **2. The SWP will cause increases of sewage production within existing sewer districts that discharge to coastal waters, which will result in negative impacts.** Changes in zoning, building use or the construction of new developments can increase sewage production (gallons per day) within existing sewer districts. These increases can be subtle and go "under the radar", since in many cases the changes do not require any additional sewerage infrastructure, other than perhaps a sewer connection. Such increases in the production of wastewater in districts with coastal outfalls, ultimately end up increasing discharges to coastal waters. These increases, when considered individually, may not appear to be significant; but cumulatively, can result in major impacts to the groundwater supply. Within these outfall districts, the SWP should take a hard stand against zoning changes, changes in use and projects that increase wastewater production. Such changes put a strain on the existing sewage treatment plants and eventually puts them over capacity. In the meantime, the zoning and planning boards continue approving increases in population densities (wastewater flow) unaware that they are exacerbating the problem. Until controls are in place, such sewer districts will cumulatively deplete the groundwater supply. Unless the SWP takes measures to stop these unabated increases, the **negative impacts** will prevail. Hopefully, the CEQ will **recommend through the DGEIS review process that revisions be made to the SWP to curtail increases of sewage production within existing sewer districts.**

3. The SWP disregards the growth inducement caused by sewering; and this oversight will result in negative impacts. Communities are hard pressed to maintain their character (e.g. rural) after sewers are installed**.** Although the SWP assures us that the local zoning boards will prevent urban sprawl and over development, history tells us
c different; one only has to look at western Long Island to see the impact of unbridled development spurred on by sewers.

The urbanization of Queens and Nassau County are prime examples of this problem; as sewers and poor planning have turned these once rural communities into high population density areas. As a result, it is no surprise that Queens "ran out of water" and Nassau is facing a water crisis; both exceeded their sustainable yields. Previous bad decisions about sewage disposal have resulted in the depletion of our groundwater supply and have caused harmful impacts on our estuaries. [LICAP Report Review, pgs. 3-6]

Unless the SWP takes measures to stop unnecessary sewering, the **negative impacts** will prevail. The SWP needs to be revised to discourage sewering in rural areas and to take into account the character of communities and how they will be affected. Hopefully, the CEQ will **recommend through the DGEIS review process that revisions be made to the SWP to curtail unwanted (unsustainable) growth inducement.**

4. The failure of the SWP to include conventional systems in its wastewater management strategy results in negative impacts. The SWP appears to be fixated on the perceived "nitrogen problem" and fails to demonstrate an understanding of the dire situation that homeowners are put into when their septic systems fail and the public health consequences. With a failed system, homeowners can not flush toilets, do laundry, wash dishes, bath or use other water in their homes. In the meantime, homeowners are adding all types of chemicals to try and fix their problems, when what they really need to do is upgrade their systems in a regulated and cost effective manner. **The SWP does not propose practical or cost-effective help for this problem; but rather plans to take action sometime in the future when funding for I/A OWTSs and sewers become available.** d

Upgrades of conventional systems are needed now, not ten or twenty years from now. Such upgrades will be expensive (though not as expensive as installing the I/A OWTSs or sewers); and homeowners need support, both financially and technically, to upgrade their systems. Rather than excluding conventional septic systems from grant programs, and focusing only on sewers and I/A OWTSs, the SWP and Suffolk County should support the upgrade of the thousands of existing sewage disposal systems, which have outlived their expected lifetime and which need replacement and upgrading. **Upgrading these systems to conventional standards is an alternative that in many situations will improve wastewater treatment and provide more practical benefits than installing I/A OWTSs or sewers.** Such fundamental upgrades will improve the ability of the septic systems to treat contaminants such as nitrogen, COD, BOD and pathogens and provide better access for maintaining and monitoring the systems. The previously prepared *Comprehensive Water Supply Plan* recognized that conventional systems, installed under Article 6 of the Sanitary Code, provided sufficient protection to the water supply; and the water quality data confirms this. [Policy Report, page 10] These older septic systems need to be upgraded and repaired immediately; many lack the basic septic tank, have dangerous block leaching pools and are hydraulically failing. Considering the benefits of conventional systems, the SWP should include a program for conventional systems in its strategy; otherwise, the problems will continue unabated for decades. **Upgrading the conventional systems to conventional standards, now, would have a positive impact; ignoring them will have a negative impact on the quality of life, safety and public health of the residents of Suffolk County. Hopefully the CEQ will recommend through the DGEIS review process that the SWP formulate an immediate strategy for using and upgrading conventional systems.**

5. The SWP assumption that nitrogen loading from onsite wastewater treatment systems are causing wetlands loss, harmful algae blooms, fish kills and reductions in clam populations in the southern bays has not been proven and may result in unnecessary actions and negative impacts. The SWP assumes that sewering will resolve all the surface water problems by reducing nitrogen loading. If the SWP is correct, then we should see a drastic improvement in the ecology of the bay after it is sewered; however, this has not proven to be the case. Based upon the SWP, onsite wastewater e

treatment systems are responsible for over 70% of the nitrogen loading into the bays. The entire south shore of Long Island from the Queens border to Oakdale has been sewered since 1981, meaning there has been no discharge of nitrogen (nitrogen load) from septic systems entering those subwatershed bay areas for over 36 years. If the Plan was correct in its assumption, then we should have seen a drastic improvement in the ecology of the bay by now. However, these sewered areas still have little or no shellfish, do experience harmful algae blooms, are losing wetlands and still have fish kills. **The theory that nitrogen from conventional septic systems is causing the problems in the southern bays has been disproven by the lack of positive ecological responses to these massive reductions of nitrogen loading**.

The County has rationalized why the sewering has not been effective, claiming that there is still nitrogen from the old systems feeding into the bay, (known as legacy nitrogen). The problem with this hypothesis, according to their own computer models, is that the legacy nitrogen was flushed out long ago. The County then has concluded that the septic systems located in the deep recharge areas to the north are the problem and they are adding nitrogen to the bays. There is no evidence that the water in the deep recharge area will discharge into the bay via the subwatersheds. [See Comments on Response to EBR Review and Coordinated response to EBR Review] Such unsubstantiated conclusions have resulted in the SWP recommending unnecessary sewering of subwatershed areas in other southern bay areas. If the Plan is enacted as is, the unnecessary sewering of homes in the subwatershed areas will occur and will most likely result in **negative impacts** to the residents and environment. Hopefully, the CEQ will identify this problem through the DGEIS review process and **recommend that revisions be made to the SWP to curtail unnecessary sewering and the installation of I/A OWTSs.**

f **6. The SWP has continued the efforts of Suffolk County in exaggerating the public health and environmental significance of nitrogen from conventional septic systems, in order to promote sewering and I/A OWTSs.** Public Officials have conducted a campaign to promote the expansion of sewer districts and the construction of I/A OWTSs in Suffolk County. The SWP includes a pattern of data manipulation, "sobering statistics" and omissions; all used to exaggerate the perceived nitrogen problem and to incorrectly designate conventional septic systems as the primary cause of the problems in the estuaries. [September 4, 2019 DGEIS Comment Report, pages 6-9 & 20-25] A relationship between conventional septic systems and the problems in the estuaries has not been proven; but has been presented as fact by Suffolk County and New York State in their efforts to obtain federal grant money for sewers. Suffolk County's policies, involving the need for sewering, should be based on unsullied information. Hopefully, the CEQ will **identify this pattern in the SWP review process and recommend that the SWP be revised so as to eliminate the sullied information and draft purer conclusions.**

g **7. The SWP must fill the gap of knowledge concerning conventional septic systems and their ability to treat the contaminants found in domestic wastewater; in order to avoid negative impacts.** More research is needed about conventional septic systems before veering away from the use of these systems. This is not part of the wastewater

disposal strategy presented in the SWP. Unfortunately, Suffolk County has not focused on the ability of conventional septic systems to treat domestic wastewater and therefore it lacks a base line to compare to I/A OWTSs. There are studies that indicate that conventional systems provide primary, secondary and tertiary degrees of treatment. These have been disregarded by Suffolk County officials. Suffolk County has not done in depth studies on the quality of effluent contained in plumes from conventional systems; instead relying on computer models to predict what will happen to the effluent. Nitrogen is not the only effluent constituent that the SWP should be concerned with. Focusing on nitrogen, when there are other contaminants of concern could result in negative impacts not being addressed by the proposed methods of sewage treatment. Empirical studies that capture and analyze the effluent in the unsaturated and saturated zones (with tracers) are necessary before making decisions on alternative methods of sewage disposal. Hopefully, the CEQ will **identify this lack of information and the potential for negative impacts through the DGEIS review process and recommend that revisions be made to the SWP to provide the most appropriate treatment and avoid negative impacts.**

h

8. The SWP must investigate the treatment of wastewater by conventional systems in areas of shallow groundwater and reevaluate the use of I/A OWTSs in these areas, in order to avoid negative impacts. Septic systems located in shallow groundwater areas have exhibited some of the best treatment of wastewater, rivaling that of STPs. These "shallow groundwater systems" are designed to maintain the leaching facilities (leaching lines or pools) above the groundwater table. Generally, the systems do not extend more than five feet below the ground surface. Studies of such systems have shown a relationship with nitrogen removal and their location in shallow groundwater areas. The majority of the coastal areas along the south shore are considered shallow groundwater areas and have exhibited groundwater chemistry and soil conditions that are conducive to naturally occurring denitrification. The studies have shown the ability of the shallow groundwater systems to treat contaminants such as nitrogen, COD, BOD and pathogens. Further investigations should be conducted to re-confirm the phenomenon of natural denitrification in shallow groundwater areas (such as coastal areas). Once this relationship of natural denitrification in shallow groundwater areas is confirmed, then better decisions can be made in respect to the appropriateness of using sewers, I/A OWTSs or conventional systems. Suffolk County should reevaluate its decision to promote and mandate the use of I/A OWTSs in coastal areas in consideration of what is already known about naturally occurring denitrification in these areas. Hopefully, the CEQ will **identify the failure of the SWP to properly evaluate naturally occurring denitrification in these coastal areas through the DGEIS review process and recommend that revisions be made to the SWP to account for the natural denitrification process and to adjust the "priority zones" accordingly.** If the Plan is enacted as is, unnecessary sewering of homes in the subwatershed areas will most likely result in **negative impacts** to the residents and environment.

i

9. **The implementation of the SWP (if it is successful in its goal of nitrogen reduction in the estuaries)** may very well result in a **negative impact** to the aquatic ecosystem. One of the primary strategies in the SWP to eliminate harmful algae blooms is to reduce nitrogen loading to the water body. Based upon results of nitrogen reductions in the western portions of the Great South Bay, this strategy does not appear to have been effective. This raises the question, why? Research suggests that nitrogen loading is not the only factor that must be considered, and other factors may be as, or more important in controlling harmful algae blooms. Among those factors are rainfall, salinity, water temperature, pH, shellfish population and circulation patterns. In fact, in some cases, a lack of nutrients (e.g., nitrogen) may promote harmful algae blooms. This is discussed in the attached draft report, *Anatomy of a Harmful Algae Bloom* (Tollefsen and Nuzzi, 2019), which was prepared in response to the DGEIS and the SWP. The SWP must consider the other ecological endpoints, not just nitrogen and HABs when developing its strategy. The SWP explicitly ignores the interactions of "*the presence of submerged aquatic vegetation, pathogens, fish kills, populations of finfish and shellfish"*. For example, shellfish are dependent upon nitrogen-requiring algae but the SWP priority ranking system explicitly fails to consider the nutritional needs of either the algae or the shellfish. Hopefully, the CEQ will **identify the failure of the SWP to properly evaluate the ecological endpoints in these coastal areas through the DGEIS review process and recommend that revisions be made to the SWP to account for them in its strategy.**

At this point we do not see how the SWP can move ahead in the approval process, considering the outstanding issues and questions raised in our comments report. Obviously, there are gaps in knowledge that need to be filled before final decisions can be made on wastewater management strategies for Suffolk County. If you have any questions on this, please feel free to contact us at rrvreynolds@optonline.net or by phone. We look forward to hearing from you in response to our comments and questions.

Respectfully,

The Ad Hoc Group for Water Quality in Suffolk County

Peter Akras PE, MSPH
Jack Mattice PHD
Robert Nuzzi PHD
Royal Reynolds PE (631 885-1926)
John T. Tanacredi PHD (516 509-7991)
Roger C. Tollefsen B.Ch.E. (631 740-0381)
Martin Trent

cc: Ken Zegel
Suffolk County Legislature

MILL POND ASSOCIATION
PO Box 501 Water Mill, NY 11976

October 10, 2019

Mr. Ken Zegel, PE, Associate Public Health Engineer
Suffolk County Department of Health Services, Office of Ecology
360 Yaphank Avenue, Suite 2B
Yaphank, NY 11980

Dear Mr. Zegel:

Re: Need for Mandatory Buffers
Suffolk County Subwatersheds Wastewater Plan

A large source of nutrient pollution feeding HABs in surface waters is residential runoff of fertilizer and pesticides. For example, recent research and modeling of 92-acre Mill Pond in Water Mill pegs residential and road runoff to be responsible for fully one-third of nutrient pollution. Unless runoff of nutrient pollution is abated, clearing our surface waters of HABs will prove perpetually ellusive. That is true for Mill Pond and likely the case for all Suffolk County bays and ponds.

Suggestion: Suffolk County should mandate 10′ buffers — at minimum, surrounding all water bodies — to abate surface runoff and prevent polluting nutrients from pouring directly into them. (Perhaps some tax abatement incentive might be offered to offset the cost of planting buffers.)

Yours truly,

Steve Abramson
Mill Pond Association, Chair
122 Mill Pond Lane
Water Mill, NY 11976

baywood
Baywood Property Owners Association
p.o. box 631
east moriches, n.y. 11940

To: Council on Environmental Quality
Date: October 16, 2019
RE: SWP- Priority areas for Sewering and I/A OWTS
Baywood Community, Inlet View Path, East Moriches, N.Y.

Dear Ladies and Gentlemen:

On behalf of our Association I am registering an objection to the inclusion of our community, Baywood, as a "Priority" area in the Subwatershed Wastewater Plan. It is our understanding that this "Priority" designation will require us to either construct sewers or install I/A OWTSs.

Baywood is a residential community consisting of 69 homes. All the homes have been constructed during the last 35 years and all are being served by septic tanks and leaching pools. All the homes are built in areas which have greater than 10 feet to groundwater (with most ground contours exceeding eighteen feet). The population density of the community is, overall, one house per two acres. The sewage disposal systems in our community are well within accepted guidelines to protect ground and surface waters and requiring additional treatment facilitates is unwarranted. To require us to construct sewers or advanced systems places an unnecessary financial burden on our residents and will negatively impact our property values.

We would appreciate confirmation that we have been removed from the "Priority" designation. Feel free to contact me at 631 878-8808. We look forward to hearing from you.

Sincerely,

Steve Keegan

BPOA President

Cc: Bridget Fleming, Legislator 2nd District
Al Krupski, Legislator 1st District
Baywood Residents

From:
Sent: Thursday, October 17, 2019 12:08 PM
To:
Subject: FW: Seatuck's comments on the SC Subwatersheds Wastewater Plan

From: TURNER [mailto:redknot@optonline.net]
Sent: Wednesday, October 16, 2019 5:25 PM
To: Zegel, Ken <Ken.Zegel@suffolkcountyny.gov>
Cc: Enrico Nardone <egnardone@seatuck.org>; mdunn@seatuck.org
Subject: Seatuck's comments on the SC Subwatersheds Wastewater Plan

ATTENTION: This email came from an external source. Do not open attachments or click on links from unknown senders or unexpected emails.

Hi Ken: Nice chatting with you earlier today. As I mentioned, you should touch base with Maureen Dunn who could most competently take you through the details of the work and findings that Seatuck's consultant developed for the Great South Bay.

In regard to the Suffolk County Subwatersheds Wastewater Plan, Seatuck hereby submits the following comments for the Department's consideration. We ask that the comments be included in the set of public comments received for the Plan:

1. General - in total the plan is an excellent document; it is both comprehensive and detailed and provides a clear delineation of the water quality problems facing the County. Further, it lays out a realistic and effective roadmap for implementing strategies to comprehensively address these water quality problems. Having said this, Seatuck believes the Plan can be improved by incorporating the following two issues into the Plan.

2. Water Reuse - water reuse or water recycling is a proven strategy for reducing nitrogen into groundwater supplies and surface waters. Approximately 2.5 billions of freshwater are reused daily in the United States, achieving a variety of important purposes such as landscape and food crop irrigation and augmenting groundwater supplies and freshwater wetlands. On Long Island, the Riverhead STP/Indian Island County Golf Course project has successfully reduced nitrogen inputs into Peconic River/Bay by an estimated 1.2 tons annually. It also provides a significant conservation benefit by eliminating the need to pump nearly 63 million gallons of water on an annual basis from the groundwater supply. Water reuse shows great promise in Suffolk County, given the fact that there are several dozen sewage treatment plants within a half-mile of a reuse target, especially golf

courses. No other strategy has the potential to so quickly and meaningfully reduce nitrogen inputs into groundwater and coastal waters.

a Seatuck believes the implementation of water reuse projects should be one of the top three recommendations in the Plan and, accordingly urges that Chapter 8 of the Plan be amended to include a recommendation that Suffolk County undertake a countywide Water Reuse Feasibility Study to guide the implementation of these reuse projects. This study should assess the technical, financial, logistical, and social issues relating to the implementation of water reuse in the county from which a proposed list of prioritized projects would be developed.

b 3. **Amend Barrier Island Breach Policy** - the existing breach in eastern Great South Bay has had demonstrable ecological and water quality benefits. Despite this, if the breach had occurred outside of the federal wilderness zone of the Fire Island National Seashore it would have been filled as were the other three breaches caused by Superstorm Sandy. This reality is due to the fact that current NY State Breach policy calls for the immediate closure of all breaches.

Given the benefits, stated above, of the existing breach, Seatuck believes NY should draft a more nuanced breach policy, in which each breach is assessed on a case-by-case basis to determine if it should be closed or be allowed to remain open. Seatuck suggests the County Plan include a recommendation that urges the state to revise its current breach policy by developing a nuanced policy that evaluates the location and other characteristics of each breach before making a determination on its fate.

Seatuck appreciates the opportunity to provide these comments and looks forward to the County's response to the issues raised herein.

Respectfully submitted,

John Turner, Conservation Policy Advocate

Seatuck Environmental Association

10/11/19 51

To Ken Zegel, PE, Associate Public Health Engineer Suffolk County Department of Health Services.

Office of Ecology, 360 Yaphank Avenue Suite 2b Yaphank, NY 11980

Dear Mr. Zegel,

I am a lifetime commercial fisherman with permits to harvest most of the species taken commercially in Long Island Sound. In the past I have participated in scientific studies and been defined as a life trained ecologist by some of the scientists involved. That comes from paying close attention to many marine species and their environments for decades a couple hundred days a year.

When I saw the Newsday article headline attached on page 1-20 of your document I cringed. It is a blatant example of hyperbole by a scientist that I know to have made questionable comments on other ecosystem related subjects before.

Let's give the wild species a little more credit. For one thing Coastal Waters are defined as the interface between terrestrial environments and the oceans. Estuaries such as Long Island Sound are Coastal Waters. The fish kills I have seen only involve one particular species of fish, menhaden. The many other species of fish in these coastal waters navigate the water quality hazards almost without any problems. Wild fish absolutely have the ability to sense water quality problems and avoid them. At times there are obstructions due to natural estuary dead ends and tidal traps. To have a clip of hyperbole that a
describes two thirds of Long Island's coastal water lacking oxygen for fish to survive without a proper ecology explanation attached is an embarrassment for your document. It makes me wonder as a reader how much of the content that I am not an expert on can be trusted to be accurate.

On another subject, cesspools are well known to have an ammonium saturation of the nearby soils to the CEC. I have read some of the few studies that make estimates on how much Nitrogen may be stored b
in the soil around cesspools. The breakdown to nitrates and nitrites to allow the transport with groundwater has many variables. In the absence of actually digging up the toxic plume in the ground surrounding a cesspool when it is abandoned for a sewer hookup or nutrient removing onsite system, we need to be realistic about how much is stored in the ground. The very limited science on this subject leads me to believe it is desired to keep this problem a secret. I understand it is impractical to dig up a huge hole but the problem needs to be public information. Bioremediation with seaweed and shellfish should be a much bigger priority and considered as a stop gap measure while the land based improvements are stalled. Located in the back estuaries bioremediation may be the most cost effective c
way to work on the legacy of nutrients stored in the ground. It needs to be highlighted as a realistic practical solution for the near future and listed as a funding priority since it has a hardship to be profitable under the guidelines where it could be properly documented for water quality credits/nutrient removal.

Regards, Tor Vincent

Comments on

Draft Generic Environmental Impact Statement (DGEIS) Suffolk County Subwatersheds Wastewater Plan
and
Suffolk County Wastewater Management Program (SWP) for the Reduction of Nitrogen Loading from Wastewater Sources

The Anatomy of a Harmful Algae Bloom

A negative impact on the estuaries?

-October 12, 2019

Introduction

One of the primary strategies being proposed by Suffolk County in its Sub-watersheds Wastewater Plan (SWP) to eliminate harmful algae blooms is to reduce nitrogen loading to its water bodies. While it is incontrovertibly true that nitrogen fuels algal blooms, we would like to present an alternative theory suggesting that the reduction of nitrogen in bay waters has, in fact, been more problematic than a possible increase to nitrogen loading. The blooms of harmful algae that continue to plague the western portions of the Great South Bay and the Peconic Bay, despite major sewer infrastructures, seem to indicate the strategy of nitrogen reduction has not been effective. This raises the question, why? Based upon our research it has become evident that nitrogen loading is not the only factor that must be considered and other factors may be important to controlling harmful algae blooms. These factors include rainfall, salinity, water temperature, perhaps chemicals in runoff and groundwater inflow other than nitrogen, pH, shellfish population and circulation. In some cases, a lack of nutrients (e.g., nitrogen) may actually promote a bloom of harmful algae. a

Purpose

The purpose of this report is to present a theory for the cause of harmful algae blooms in the marine waters of Suffolk County. This theory does not focus solely on elevated levels of nitrogen as the cause. Based upon this theory, various management options to control harmful algae blooms are discussed in conjunction with improving other ecological endpoints, such as shellfish. We believe that neither the SWP nor those involved in its production, review and dissemination have sufficiently weighed the complexities of nitrogen and the harmful algae in our marine waters.

<u>What we know</u>: What caused the brown tide?

In July 2013, Dr. Christopher J. Gobler, Endowed Chair of Coastal Ecology and Conservation, Stony Brook University, and one of us (Tollefsen) were exchanging emails about the relationships of Dissolved Inorganic Nitrogen (DIN), Dissolved Organic Nitrogen (DON), droughts, nitrogen pulses, algal blooms and the harmful algae *Aureococcus anophagefferens (Brown Tide).* Dr. Gobler provided the following figure (Fig.1) presenting data collected from a continuous-sampling buoy maintained by the United States Geological Survey

(USGS, located at the mouth of the Peconic River under the County Road 105 Bridge as it enters Peconic Bay. Samples were taken at 6-minute intervals. The USGS website http://waterdata.usgs.gov/nwis/uv/?site_no=01304562 offers more detail.

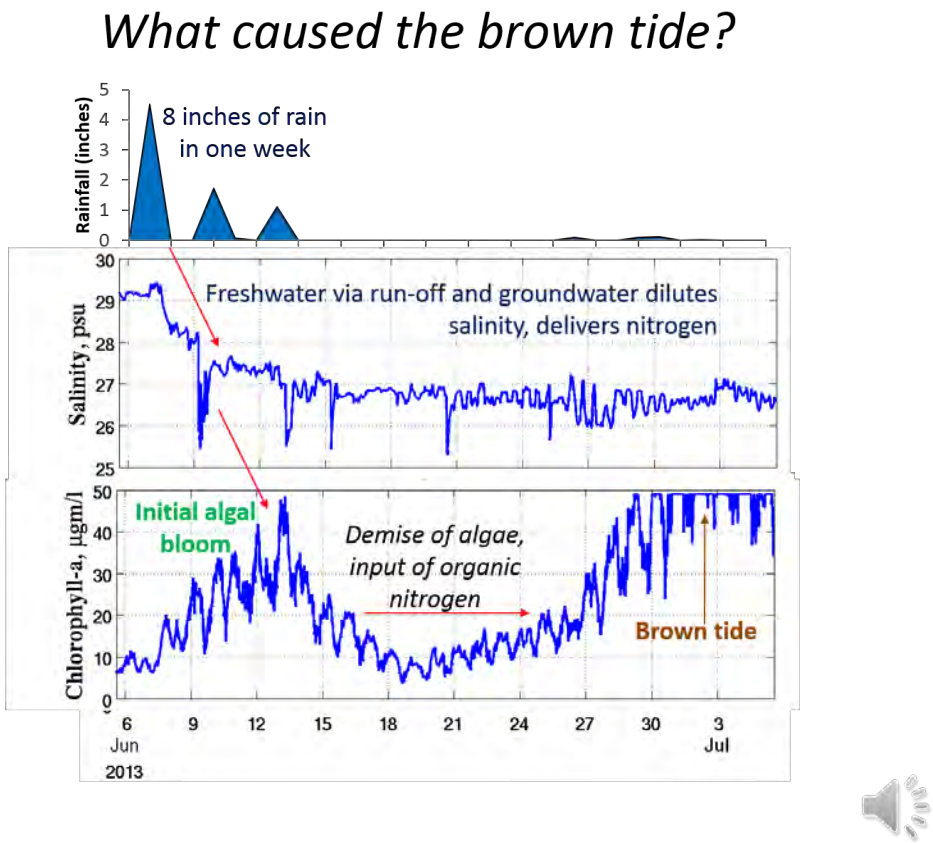

Figure 1. Graphs provided by C. Gobler (SUNY, Stony Brook)

The figure shows the impact of rain on the bay's salinity. The sampling period began during a drought (note the 29 ppm salinity). This was followed by three major rain events occurring between June 5 and June 15, 2013. Collectively, over eleven inches of rain fell. This influx of fresh water can be observed as a rapid decrease to a salinity of 26-27 ppm that is more typical for this area.

The levels of chlorophyll-a contained in algae are indicators of algal populations. Algae form the base of our bay's food web and are called primary producers. Shellfish consume algae; clams mussels, oysters and menhaden (bunker) are examples of secondary productivity. Before the rain, chlorophyll-a was very low, increasing temporarily after the rain, and returning to low levels before gradually spiking to very high levels.

The three graphs within Figure 1 reveal the initiation and development of a Brown Tide. But to better understand the process, it is first necessary to distinguish between two different forms of nitrogen. Inorganic nitrogen is made up of nitrate, nitrite, ammonia and nitrogen gas. When these forms of nitrogen are added to water, nitrate, nitrite and

ammonia are highly soluble and can be measured as dissolved inorganic nitrogen (DIN); nitrogen gas is only slightly soluble. Organic nitrogen is found in the cells of living things and is made up of proteins, peptides and amino acids. Organic nitrogen is also highly soluble in water and is measured as dissolved organic nitrogen (DON).

These two types of nitrogen (DIN and DON) cycle back and forth in our bays in a process called re-mineralization. Most of the algae that support our bay's productivity readily use DIN for growth. We call these algae beneficial because they support the rest of the bay's productivity. As these beneficial algae use DIN to grow, the DIN is removed from the water and is incorporated into their cells where it is converted into organic nitrogen. When the algae die, organic nitrogen is released back into the water as DON. Beneficial algae may not be able to use DON; however, there are harmful algae such as *Aureococcus anophagefferens*, ("Brown Tide"), that can efficiently use it.

In the sampling area, DIN has been noted as the limiting factor for algal growth. The SWP has determined that a major source of DIN in this area is from groundwater. When drought caused a reduction in groundwater flow this resulted in a higher salinity and a lower delivery of DIN. With a reduced concentration of DIN, algal populations were suppressed and low, (Nixon, S.W., and B.A. Buckley. 2002) This algal reduction can be seen in Fig. 1 as the low starting point for chlorophyll-a.

Major rain events caused a pulse of inorganic nitrogen that came from a combination of atmospheric deposition, groundwater flow, and run-off. Notice the salinity fell in response to the dilution caused by the rain and increased groundwater flow. The DIN concentration became high enough for the beneficial algae to use (note the rise in chlorophyll-a). Dr. Gobler (personal communication) found that the "initial bloom" consisted of seasonally beneficial algae, the algae upon which secondary production depends.

It is reasonable to suspect that a healthy population of shellfish, as was present prior to the steady decadal decrease of nitrogen in the bays documented by data collected by the Suffolk County Department of Health Services (SCDHS), would have filtered out the beneficial algae by consuming it. In this way, shellfish play an important part in controlling algae populations. High densities of clams, for instance, have shown the ability to filter every gallon of water from major bays every three days. Unfortunately, hard clam populations in Great South Bay have collapsed and the scallop population in Peconic Bay has lost over 90% of its scallops (Fig.2).

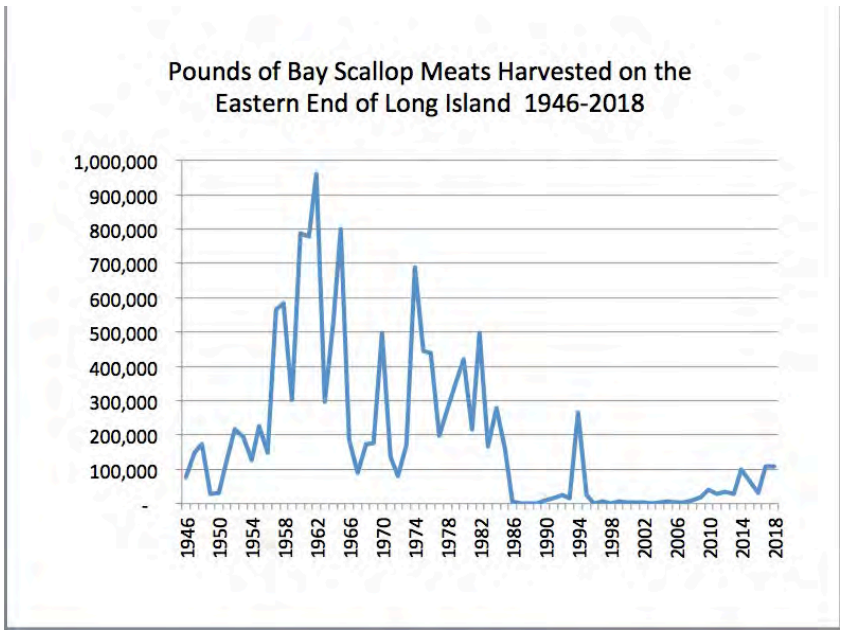

Figure 2. Bay scallop harvest 1946-2018

Without the grazing pressure of these and other secondary producers, the initial bloom of beneficial algae was not consumed. As the beneficial algae depleted the limited DIN, the algae starved. This can be seen in Fig. 1 as the precipitous decline in chlorophyll-a.

Even though the rain event had passed, the hydraulic pressure that had been created by the major rain events caused groundwater to continue to flow. Note that salinity became relatively constant. A consistent supply of DIN might have maintained the initial algal bloom but whatever nitrogen (N) was introduced by the groundwater was apparently insufficient to do so. After the beneficial algae consumed the pulsed DIN, this bloom collapsed due to starvation. As the dead algae decomposed, the N in the algae that was re-mineralized was introduced into the water as DON, resulting in a bay environment low in DIN but high in DON.

The relative quantities and type of nitrogen can significantly affect which algae may dominate. Gilbert et al. (2016) discussed the importance of the forms of nitrogen (inorganic, organic, oxidized, reduced, "new", "regenerated") in determining phytoplankton dynamics. In a study of the genome of the Brown Tide alga, "biogeochemical measurements showed that the harmful alga *Auerococcus anophagefferens* outcompeted co-occurring phytoplankton in estuaries with elevated levels of dissolved organic matter and turbidity and low levels of dissolved inorganic nitrogen." (Gobler, et al. 2011).

Scientists have noted how groundwater can impact the algal community and these observations have been extensively reported. Laroche, et al. (1997) reported that variable and low flows of groundwater are associated with Brown Tides. Another example comes from brown tides in US mid-Atlantic estuaries (Gobler et al., 2005). These blooms are often preceded by a 'pre-bloom' of other algal species that are stimulated by nitrogen from groundwater flow (Gobler and Sañudo-Wilhelmy, 2001). When groundwater flow

diminishes during summer and the initial bloom is re-mineralized, organic nitrogen levels increase, and *A. anophagefferens* becomes the dominant alga. Thus, nutrients may continue to serve as fuel for blooms long after the initial nutrient loading occurs." (Heisler, et al. 2008)

The timing of how Dissolved Inorganic Nitrogen (DIN) or Dissolved Organic Nitrogen (DON) is introduced to a bay may have significant consequences. While beneficial algae are important to the bay, "a sudden pulse of high nutrient concentrations may greatly affect the natural succession of organisms, have a negative effect on the diversity through the dominance of a single species, and can increase the possibility of a harmful algal bloom development". (Spatharis, et al. 2007).

During observations of an earlier Brown Tide, Laroche et al. (1997) found that the "brown tide coincided with a drought period during which time the introduction of inorganic nitrogen through groundwater flow was minimal". A similar situation seems to have occurred during the 2013 bloom. The paucity of DIN created an environment in which the brown tide, because of its' ability to utilize DON, was able to dominate. Once the brown tide began, it utilized additional N resources as they became available. The association of *A. anophagefferens* with an increasing availability of organic nitrogen and a decreasing availability of DIN has been noted elsewhere by (Qiao, et al. 2017) and, most recently, by (Yao, et al. 2019) who noted that "*A. anophagefferens* blooms occurred mostly in the scallop culturing regions, and that the blooms were associated with high salinity and low inorganic nutrient levels" Gobler et. al. (2011) noted that *A. anophagefferens* outcompetes other phytoplankton in estuaries that have elevated organic matter concentrations. "This characteristic, along with its unique gene set, may provide A. anophagefferens with a greater capacity to use organic compounds for nitrogenous nutrition compared with its competitors, a hypothesis supported by its dominance in systems with elevated ratios of dissolved organic nitrogen to dissolved inorganic nitrogen and the reduction in dissolved organic nitrogen concentrations often observed during the initiation of brown tides." (Gobler et al. 2011).

It is interesting to note that the quantity of chlorophyll-a in the 2013 Brown Tide bloom was much higher than during the bloom of the beneficial algae; this is likely due to the Brown Tide's greater efficiency for harvesting low levels of N, organic or inorganic, than that of the beneficial algae, and an apparent ability for increased growth in the presence of both (Pustizzi et al. 2004).

A distinction must be made between the initiation of a bloom of harmful algae and the expansion of it. During the June/July 2013 observations, the bloom was <u>initiated</u> when DIN was low and DON was rising. The <u>expansion</u> of the bloom occurred as additional sources of DIN and/or DON became available.

This purpose of this paper is to foster discussion concerning the cause of Suffolk County's blooms of harmful algae; however harmful algae are an international concern. As has occurred in Suffolk County, many of these blooms began when nutrients are low. In France, "*Dinophysis spp.* (responsible for diarrheic shellfish poisoning) increased most rapidly

when nutrients (nitrogen) were greatly reduced. The maximum cell concentrations were recorded in the nutrient-poorest offshore waters." (Delmas et al. 1992). *Alexandrium catenella* was observed to have a competitive advantage over other members of the phytoplankton even under low conditions of DON. (Collosa et al. 2007). Florida has been plagued by "*K. brevis* (Red Tides) that get its initial advantage in low absolute nutrient concentrations." "Once the *K. brevis* population reaches a sufficient concentration to dominate the phytoplankton, this monospecific bloom can then utilize all available nutrient sources". (Weisberg et al. 2012).

"Coastal ecosystems have lacked recovery following reduced nutrient inputs." "The role of nutrient inputs in controlling phytoplankton mass has been generally oversimplified in dialogues between scientists and managers, possibly driven by the benign intention to deliver a message clear enough to prompt restoration efforts." "The failure of coastal ecosystems to return to past ecological conditions upon significant reduction in nutrient inputs is disturbing both to scientists and managers, as current models and management frameworks assume a direct, continuous response of coastal ecosystems to altered nutrient inputs." (Durante et al. 2007).

b Finally, it has been stated that the level of nitrogen in our bays has been increasing. While this may be true for selected time periods, Figure 3, which is representative of the South Shore Estuary Reserve (SSER: Great South Bay, Moriches Bay, Shinnecock Bay) and Peconic Bay reveals that total nitrogen levels have been decreasing over the last several decades.

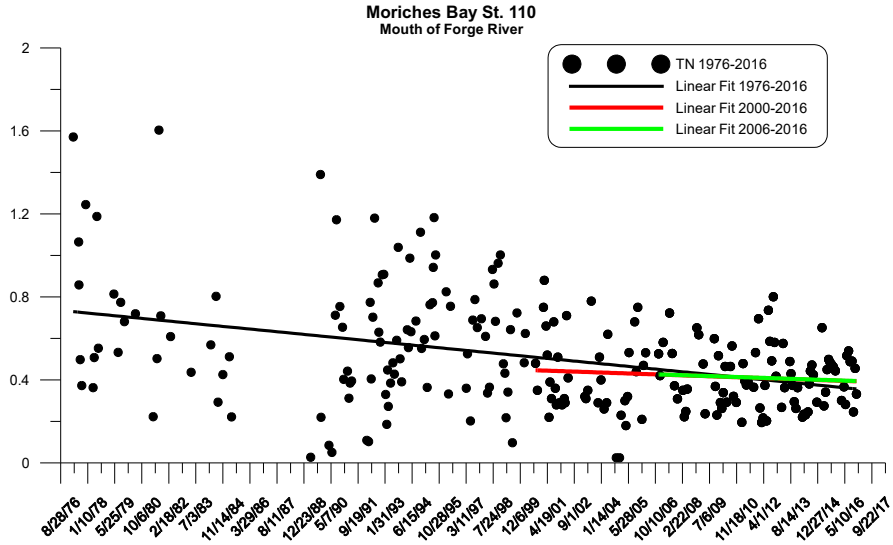

Figure 3. Total nitrogen (mg/l) at the mouth of the Forge River (SCDHS Station 110)

<u>What can we do:</u> How can the bays be managed to prevent HABs?

Based on the previous information it seems there are several choices:

1) Eliminate N pulses
2) Increase secondary productivity

3) Reduce N coming into the bays from groundwater
4) Other management options?

1) Eliminate N pulses

Trying to eliminate N pulses seems impossible. Locally, we cannot control major rain events that carry nitrogen. However, the impact caused by of a pulse of N is greater to a bay that has lower levels of it. Table 1 below was adapted from a SOMAS (School of Marine and Atmospheric Sciences) slide presentation. Additional N loading information for other marine water bodies was added as it became available. A literature search linked blooms of harmful algae to the water bodies that had reported them.

Table 1. Nitrogen loading of some major estuaries or water bodies (adapted from SOMAS)

Nitrogen Loading of some major estauries or water bodies

	N Load (kg N/ha yr)	Reference	Harmful Algal Blooms
Sage Lot Pond, Massachuetts	14	Valiela et al, (2000a)	
Peconic Bay, New York	19	Nature Conservancy (2014))	1986 to present
Sarasota Bay. Florida 2016	21	2017 After reductions per Albertson	2016 k. breves
Coastal Bays	20-40	Nutrients in Estuaries -NEP (2010)	intermittent in all
Morton Bay, Australia	24	O'Donohue et al. (2000)	1986?, 1995-2002
Bannegat Bay, New Jersey	26-50	Bowen et al. (2007): NEP (2010)	1988-2013
Tampa Bay, Florida	28	Bianchi et al. (1999)	recurring Red Tide - K brevis
Great South Bay, New York	38	Valiela & Kinney (2008)	1986 - present
Sarasota Bay, Florida 1995	56	Bianchi et al. (1999)	
West Falmouth Harbor, Massachusetts	76	Carmichael et al. (2004)	
Venice Lagoon, Italy	130	Sfriso et al. (1992)	
Pensacola Bay, Florida	140	Nutrients in Estuaries -NEP (2010)	
Roskild Fjord, Denmark	204	Nienhuis (1992)	
Chesapeake Bay	210	Nutrients in Estuaries -NEP (2010)	
Bass Harbor, Massachusetts	225	Kinney & Roman (1992)	
Great Bay, New Hampshire	252	Short & Matthieson (1992)	
Delaware Bay	260	Nutrients in Estuaries -NEP (2010)	
Narragansett Bay, Rhode Island	280	Nutrients in Estuaries -NEP (2010)	once during 1985 drought
Quashnet River, Massachusetts	350	Valiela et al. (2000a)	
Waden Sea, Northern Europe	500	Nienhuis (1992)	
Childs River, Massachusetts	601	Valiela et al. (2000a)	
Yaquina Bay, Florida	1000	Nutrients in Estuaries -NEP (2010)	
Jamacia Bay, New York	1093	Benotti (2005)	few - if any

In most cases, researchers have found no link between High nutrient levels and incidence of Harmful algal

It should be noted that only the bays that have low N loadings have experienced blooms of harmful algae. In support of this observation, Keller & Rice (1989) wrote that "*A. anophagefferens* is not a strong competitor when DIN is high, as shown in nutrient enrichment studies in mesocosms, where cell density of *A. anophagefferens* was inversely correlated with DIN concentrations."

c

If this trend relating low N loads to blooms of harmful algae is confirmed and continues, care must be exercised before N load reductions are made. This action

may result in more blooms of harmful algae rather than less. It may be prudent to investigate ways to increase the seasonal background levels of the bay DIN so that pulses don't overwhelm the ecosystem.

2) Increase Secondary Productivity

There has been a growing awareness that shellfish are important to the health of our bays and can provide control over algal blooms. The control of algae by shellfish is referred to as "top-down control". If shellfish populations were high enough, this "top-down control" could reduce the availability of both DIN and DON. Reitsma et al. (2017) Jackson (2001) and Lotze et al. (2006) have stressed the need to restore secondary producers such as clams as effective top-down controls on estuarine ecosystems. But the bays in Suffolk County have lost over 90% of their shellfish. Millions of dollars have been spent to restock shellfish but there has been little success. Blooms of harmful algae have been blamed for shellfish reproduction failures or death but little research has been conducted to see if those bays that are experiencing shellfish declines have a beneficial algal population sufficient to support the shellfish.

Without the "top-down control", one might be tempted to reduce the N that fuels blooms of harmful algae. This "bottom-up" control is the management strategy that the SWP has chosen. But there is a problem with reducing the N in a system that already has low loadings of N. Nitrogen reduction may further limit shellfish populations, not promote them. Without the "top down control" provided by shellfish, uncontrolled N pulses may lead to a greater number of blooms of harmful toxic algae.

A solution to increasing the survival of secondary producers may be to seasonally manage the input of nitrogen rather than simply trying to reduce it. Narragansett
d Bay is trying to manage its N discharge limits to accommodate the seasonal needs of shellfish. "While nutrient over-loading in estuaries has a well-known set of negative consequences (Valiela et al. 1992, Nixon 1995, Kemp et al. 2005), the stimulation of secondary production in bivalves could be an overlooked positive effect of nutrient loading" (Gobler et al, 2009). Blooms of harmful algae were not an issue when levels of DIN were higher in both the Great South and Peconic Bays due to sources from migratory and domestic ducks, menhaden processing or increased N contributions from an expanding population of residents.

3) Reduce the N coming into the bays through groundwater.

The SWP has proposed that blooms of harmful algae will be reduced or eliminated by reducing N using either on-site advanced wastewater treatment systems or municipal sewers. However, when sewers have reduced nitrogen, the results have not been encouraging. "The off-shore rerouting of sewage previously discharged directly into the western Great South Bay during the early 1980s led to lower levels of dissolved inorganic nitrogen there, thus creating a nutrient regime which reduced

total annual phytoplankton biomass, but favored dominance by *A. anophagefferens* as blooms began to first develop in the late 1980s." (Anderson et al. 2008).

e

The SWP has proposed reducing N to a system that is already N-limited. This will likely reduce primary productivity but may open niches for algae that may be better suited for low N conditions. Because secondary productivity depends upon primary productivity, reducing N offers little hope of nurturing sufficient populations of clams or oysters that could be beneficial for our bays.

4) Other management options?

f

There are surely other management options that will address the N concerns in drinking water and lakes without the potential of condemning our bays to continuing blooms of harmful algae and reduced secondary productivity. However because the SWP has only considered a nitrogen reduction strategy it has failed to systematically explore any other possibilities. The SWP should do so!

<u>Conclusion:</u> Current N Management Status

""Management" encompasses both the ability to affect change, and the ability to direct change: one manages for "something"" (Nuzzi 2005). The fact is that there has been no discussion from the SWP concerning N management other than reduction and the SWP has not set any goals that define bay restorations. Are we to believe that it is possible to selectively starve harmful algae without impacting any other part of the bays' diverse and complex ecosystem? There is no scientific basis to support this extreme position that runs counter to the principles of Ecosystem Based Management. The SWP proposal to reduce nitrogen may very well have a negative impact on our bays and that stance should certainly be a cause of concern. Further inquiry prior to the acceptance of the Draft Generic Environmental Impact Statement is in order.

Roger C. Tollefsen
23 Bay Ave W
Hampton Bays, NY 11946
631 740-0381

NYSeafood@msn.com

Robert Nuzzi, Ph.D.
39 Bucks Path
East Hampton, NY 11937
631-324-5488

rnuzzi@aol.com

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Comments Provided by Mitch Pulley

Libi's List
We are Long Island!

Long Island Builders Institute

TESTIMONY OF THE LONG ISLAND BUILDERS INSTITUTE

DRAFT SUBWATERSHEDS WASTEWATER PLAN

September 6, 2019

Brentwood, NY

The Long Island Builders Institute, the largest residential and multi family trade association in New York State, wishes to express its deepest appreciation to County Executive Steve Bellone and the Suffolk County Department of Health Services for allowing us to participate in the Reclaim our Water proceedings and the Article Six committee relating to modifications to county ordinances and rules relating to the protection of our groundwater and surface water. In addition, we welcome the opportunity to comment upon the Draft Sub watersheds Wastewater Plan, which provides a significant analysis of the state of our water in Suffolk County and provides a series of draft recommendations relating to the need to find meaningful solutions to the infusion of nitrogen and other particulates into our water.

The Long Island Builders Institute strongly supports many of the initiatives included within the report with the following comments:

1. We strongly support the statement on page ES-7 which clearly indicates that "the source of nitrogen
a from onsite wastewater systems originates from the estimated 365,000 residential on-site wastewater disposal systems (OSDS) and the estimated 18,700 commercial on site systems that are not designed to remove nitrogen. The existing sewer districts throughout Suffolk County have been very effective in reducing groundwater contamination within their respective district boundaries... Thus, it is clear to us that the most effective means of reducing nitrogen into our groundwater is to first increase the number of parcels in our county which are connected into either a sewer district itself or a sewage treatment plant. This is where we should spend our very precious resources to get the largest benefit for our water, an increase in the areas which are served by sewer systems and an increase in the areas which are connected to either private or public sewage treatment plants. LIBI would suggest the following methods to accomplish these very important goals:

a. We strongly support using any resources from any funding source first for the expansion of
b sewer districts throughout the county. This should be accomplished by the creation of a countywide sewer district which can take into account all of the priority areas listed in this report. Coming on the recent votes to move forward sewer construction in Mastic Beach and the Carlls River Watershed and recent state legislative passage of necessary legislation in Kings Park and Smithtown, now is the time to prioritize many other areas of the county for such sewer expansion. Sewer development is the best way to reduce nitrogen flow into our groundwater, provides significant economic benefits to the local community and takes into account climate change impacts upon our local water bodies.
b. LIBI fully understands that a new funding source is necessary within the county, both for sewer construction as well as a subsidy program for the installation of new IA systems. We firmly believe that since everyone in the county will benefit from the reduction in nitrogen
c going into our groundwater, that everyone should pay the new revenue source, no exceptions and that it cannot and should not solely be put on the responsibility of our homeowners, both present and future ones. In addition, such a revenue source for a subsidy program for the installation of new IA systems should include new home construction and condominiums and town houses, so that everyone who wants to or is required to put in a new system has the ability to use the subsidy program to alleviate the new costs involved.
d c. We strongly support the increase from 15,000 to 30,000 gallons for the use of so-called attachment A systems which can provide significant environmental benefits at a fraction of

the cost. The increase in the gallonages and the reduction of the setbacks which come with the system in many areas, especially in downtown areas, will allow such systems to provide meaningful benefits at densities that are very important in downtown areas and other parts of the county without a specific sewer system. The reduction in setback requirements is an essential component of this approval as many downtown areas do not have the separation necessary from other properties. It is essential that the county make the use of such systems at a higher gallonage easy, efficient and timely as we move forward. The faster such systems are allowed at a higher gallonage, the faster the water quality in those areas will benefit. One of the most important planning priorities of the development of our substantial rental housing needs is recommended by the county to go into downtown areas and this provision is essential to make that happen.

d. In many areas of the county, an existing sewage treatment plant, either public or privately operated, is now working to reduce nitrogen flow. However, such systems are not being allowed to be used at the most efficient manner possible. Many of these public or private systems are being operated at only 40-60% capacity, meaning that thousands of gallons that could be treated through such systems which already exist are going into our groundwater because of archaic gallonage flow computations required by current county rules. Think of the thousands and thousands of gallons of wastewater that could today be treated by such systems which are being denied solely because of artificial gallonage computations that are assumed to occur but have no relation at all to the actual flows being received and treated by such plants. All across Suffolk County exist such plants, waiting to be allowed to connect parcels in the immediate vicinity which are on onsite wastewater systems which were never designed to take into account nitrogen flow and are the worst purveyors of such nitrogen. Now is the time for a more efficient gallonage flow system to be created, with real numbers for flows from various types of development and to allow such plants now to connect outside parcels and remove thousands of septic systems from our community. It requires no new funding, no new construction and no new environmental studies, but only the revising of the density formulas to reflect the real-life amount of sanitary density required for both existing and future plants. This will have the added advantage of allowing properties that could not otherwise benefit from connecting to sewage treatment plants the opportunity to do so. This will reduce nitrogen loading throughout the County and allow for new development and re-development in areas where they are currently prohibited. Open up our sewage treatment plants so that they can accomplish in a more efficient manner what they were designed to do, namely to reduce nitrogen flow. e

1. 2. LIBI continues to recommend that any requirement for the use of new IA systems in new construction focus on the priority areas first rather than imposing an across the board requirement. We do so for a variety of reasons. First, the county has not made available to anyone who is purchasing a new home, even an affordable home purchased by someone on a fixed income, subsidies to reduce or eliminate the $20,000 to $25,000 cost of installation of such systems. It is totally unfair to subsidize someone who has contaminated the groundwater in their community for many years and not subsidize someone who is purchasing a new home in our county and is now required to spend upwards of $25,000 more for the purchase of such home. Without a subsidy, the cost either falls to the buyer in the form of higher prices in good times or upon the developer in bad times. Any new home now is required to install a much more efficient system under current f

standards, which will provide new safety measures, especially in non-priority areas as set out in the report. Second, all such emphasis must be placed on the thousands of such homes and commercial establishments which continue to discharge such nitrogen directly into our ground. Let us stop this first, going priority area to priority area and treat such new homes in the same fashion. Of the approximately 365,000 on-site sewage disposal systems on Long Island, approximately 252,530 pre-date the requirement for septic tanks. (Defined as cesspools, which do not work as well as the current septic systems.) This plan mandates I/A OWTS on all newly constructed homes on Long Island during the Phase I – Program Ramp-up while not addressing the real cause of water pollution from wastewater. The focus should be on existing homes with cesspools and failed systems. Based on the 208 study, newly constructed homes with septic systems that comply with the zoning and density requirements of Article 6 will not adversely affect nitrogen loading to ground water and our drinking water. For example, a one-acre lot in the middle of the Island with good soil conditions that has average total nitrogen impact to groundwater of 4, when the drinking water standard is 10. The additional cost and expense required to further reduce nitrogen loading for new construction can only be justified in these sensitive surface water areas and groundwater priority #1 areas that deserve further protection. The plan should be amended to allow for priority areas of current groundwater contamination to be used first for both sewer or sewage treatment plant construction and any new home construction mandate should follow the modifications of each priority area.

g Phase in of new construction mandate is needed to allow time to incrementally increase the health department staff. The increase in staff and the funding for same is needed to review applications and to register, monitor and enforce the operation and maintenance of all these new systems. Additional health department staff will be required to comply with the requirements, powers and responsibilities of the Plan. The Department responsibilities include but are not limited to approval and registration of each system, overseeing the installation, maintenance and operation of all I/A OWTS, receive and maintain information and reports, may inspect I/A OWTS and sample discharges as often as deemed necessary by the Department to determine compliance upon reasonable notice to property owner, maintain a list of approved I/A OWTS technologies and to promulgate procedures, protocols and standards as necessary for implementation and enforcement in order to ensure the long term operation, maintenance and management of all I/A OWTS. Necessary and proper staffing should be in place prior to implementation to avoid delays in the approval and in the closing of title for new homeowners. This is especially true when the homeowner needs to close on time in a rising interest rate environment.

h Phase in new construction mandate is needed to avoid a lack of qualified licensed installers and a shortage in the availability and supply of these systems on long island. This will allow for increased competition among manufacturers and licensed installers for each system. Avoiding a possible shortage and allowing more time to have additional Installers licensed will increase competition and mitigate the significant economic impact that this legislation with have on the new home construction industry on Long Island.

i Phase in is needed in order to further evaluate the effectiveness of these new systems and allow additional time to further study, modify and improve the operation and efficiency of these new systems. It is important to consider that the homeowner must actively manage these new systems. This plan is imposing financial and legal requirements on the home owner and residents of Suffolk County to actively maintain and operate these systems. The proposed plan lacks the required notice and disclosure that outlines the owner's responsibility for the operation and maintenance for the proposed systems and the fact that the owner may be subject to civil action and additional civil penalties for their failure to

do so. These new systems will increase the cost of homeownership on Long Island because they require the active maintenance and upkeep by the Owner. (Estimated to be $200 to $500 per year) Unless the I/A OWTS is phased in there will be a lack of qualified maintenance providers across Long Island. This will only increase the cost because each Home Owner is required to have a maintenance provider contract is the burden and responsibility left up to the Builder? What parts need to be replaced under the system? What is the expected budget for repairs and replacement? What warranty does the Manufacturer provide? Which parts and how long is the warranty good for? Under what conditions is the warranty null and void? What warranty does the Installer provide? How long? Is the burden and responsibility to provide this information left up to the Builder? j

Warranty and legal liability of new systems is being placed on the builder. Simply stating that the Installer will hold the builder harmless does not alleviate the Builders legal obligation under the Warranty Law in New York State. In fact, if the installer has no money, the hold harmless provision is worthless. Under the NYS Housing Merchant Implied Warranty Law plumbing systems needs to be free from defects for two (2) years from the date of purchase. Plumbing systems are defined to include waste and vent pipes and their fittings; septic tanks and their drain fields; sewer service piping, and sewage disposal systems, all to the extent that they are installed in the home. It is the Builder who winds up being sued and forced to defend the action in court. We want to be indemnified and held harmless by Suffolk County in the event these new systems are not properly designed and installed. In addition, the Plan should expressly state that the Builder is not responsible for the failure of the system to meet Suffolk County monitoring standards due to the lack of maintenance and upkeep of the system by the Home Owner or the private maintenance system provider hired by the home owner. Furthermore, we hereby request a complete update on all the data for all of the proposed systems including but not limited to the name of each manufacturer, the warranty terms provided for each part, the name of the installer, the warranty and/or guarantee provided, the budget for the repair and replacement for each system for the first ten years of operation, soil conditions of each site, end point sampling location, etc. Who was the maintenance provider for each system? Cost of services for each system? Any additional services provided that would have been charged to the Home Owner? Who handled any punch list items or problems that developed after installation? State the number of times the manufacturer or installer had to come back to the site to correct any problem? State what the problem was and the cost to correct it? How long does it take for each system to reach a steady state in order to begin monitoring the system? Does the maintenance service provider or installer charge extra for startup services? Provide a complete cost of the system including leaching fields. Who installed each leaching field and were there any coordination issues between the installation of the leaching fields and installation of the system? How long does it take to install a complete system? k l

Implementation of this plan should not be done until funding options for the installation of I/A OWTS are considered and fully explored for both new and existing homes. Affordability is an issue for both new and existing homes on Long Island. Both affordable and moderate price homes are adversely impacted by this legislation. The cost of the home will increase $15,000 to $20,000 and the maintenance costs will range from $200 to $500 per year. (Note: A clear 5/10 year budget for the cost of repairs and replacements parts and operation and maintenance for each system has not been provided.) This additional financial burden makes it more difficult to qualify for a mortgage. Even on an average cost of a single-family home on Long Island of $400,000, this one piece of legislation represents a 5% increase in the cost of housing. The increased cost of the home because of the mandated installation of such a system will require an increase in mortgage funding without a subsidy which will reduce or eliminate the ability of many of our residents to purchase a new home . Funding or incentives must be provided for affordable and middle-income Home Buyers in Suffolk County with the price m

threshold being 120% of the average price of a house on Long Island. In addition septic systems that comply with the zoning and density requirements of Article 6 will not adversely affect nitrogen loading to ground water and our drinking water. For example, a one-acre lot in the middle of the Island with good soil conditions that has average total nitrogen impact to groundwater of 4, when the drinking water standard is 10. The additional cost and expense required to further reduce nitrogen loading for new construction can only be justified in these sensitive surface water areas and groundwater priority #1 areas that deserve further protection.

n 4. The report does not take into account the need to ensure that the variety of Transfer of Development Rights programs in the county actually work and take into account the need to determine usage in both sensitive and non-sensitive areas of the county. The use of Pine Barrens Credits must be made easier and more appropriate and such usage should be uniform throughout the county. Will such credits be restricted in their usage to only certain areas or will the program and the set of rules incorporated within the program be allowed to continue? In addition, the use of such credits for double density or less should be considered a minor variance under the new health department standard, thus reducing or eliminating the need to go through the lengthy Board of Review process. This will save the County resources by reducing the number of hearings before the Board and expedite approval of building permits and the issuance of Certificates of Occupancy, both of which add to county and town revenue streams.

o 5. LIBI is particularly concerned with the recommendation to move from 600 gallons to 300 gallons for commercial uses on the East End will have unintended consequences and may substantially reduce the ability of such systems to actually improve the groundwater. The East End has many tourist-related businesses such as restaurants which may already be over density. Reducing the gallons per day from 600 to 300 will have the consequence of making those uses non-conforming and may make it impossible for them to meet the proposed sanitary standards. Thus, many of those businesses may find themselves in a position where they cannot further improve their property and even have the option of adding an IA system because they are over double density. Thus, reducing the gallonage maximum may substantially reduce the ability of such businesses to actually improve the groundwater by adding such much-improved sanitary systems. We would recommend a "grandfathering" of current uses and a system to allow them to improve their nitrogen flow systems through upgrades of current systems when making other substantial improvements to their property.

p 6. As this series of initiatives will be both controversial and lengthy, we would strongly recommend that the sub watershed maps be updated on a periodic basis to ensure that the best information and analysis is being used at all times.

q 7. Upzoning provisions on Page ES-88 would eliminate many or all single and separate lot provisions. This will substantially impact a variety of residential and commercial lots, significantly reducing or eliminating their value and reduce the opportunity for development in those areas.

The Draft Sub Watersheds Management Plan currently being considered is one of the most important actions taken by Suffolk County to create a new system of wastewater treatment to reduce

nitrogen flow, an action supported by all. The SWP adoptive management and monitoring plan as outlined on Page ES-84 will discuss a variety of other issues, such as SPDES permits over 1000 gallons and the use of large capacity cesspools. LIBI is very hopeful that our comments and suggestions will assist in the development of a series of real initiatives which will move our county forward and we urge continued meetings of all stakeholders. Thank you very much for your consideration of our views.

Suffolk County Department of Health Services
Draft Subwatersheds Wastewater Plan

October 16, 2019
Dear Council on Environmental Quality,

Rarely are we in a position to make a positive impact on the lives of millions of people. What's even more uncommon is when that impact has the potential to ripple positive effects on the world around us. For Suffolk County, the Subwatersheds Plan (SWP) is a chance to defeat nitrogen pollution and leave Long Island's waters in better condition than currently exists. The SWP is also an opportunity to tackle the challenges posed by development to safe and clean water, which is the foundation of a prosperous, healthy society.

Suffolk County is not unique in the battle to defeat nitrogen pollution. Hawaii, Cape Cod, North Carolina, Puerto Rico, Florida and many regions around the world are searching for answers to prevent sewage from contaminating surface and ground water. Nitrogen pollution causes harmful algal blooms, poisons wildlife, closes shellfish beds and beaches, and threatens the water we drink. In Suffolk County, approximately 360,000 residential septic systems and cesspools must be transitioned to nitrogen-removing technology (referred to is innovative-advanced or IA septic systems) in order to restore and protect our water. What makes Long Island different from other places battling nitrogen pollution is that Suffolk County now has a plan where for a reasonable cost, we can restore and protect our water.

The SWP is a comprehensive proposal based on sound, rigorous science, and should be adopted with the following adjustments:

1. **Set aside funds to make property transfers eligible for grants**. The SWP proposes IA installation at the time of property transfer. To ensure this proposal is successful, it should be contingent upon whether enough grant funding can be generated and extended to homeowners or new property owners at the time of property transfer. a
2. **Identify a source of recurring funding**. Our waterways bring in tens of billions of dollars to Long Island's regional economy. Investing $80 million per year, as the SWP suggests, would result in a considerable return on investment. Exploring different ways to generate the $80 million per year to fund the SWP is a critical next step. b
3. **Expedite the timeline**. The health of our water cannot sustain more sewage pollution. While a 50-year timeline is a great start, we must act faster. The SWP is amenable to an expedited timeline and we should set aside the money to do so. c
4. **Include cluster systems**. Several residents living on a cul-de-sac or segmented community may prefer to utilize an IA system that is designed for multiple homes. These homes should have access to grant funding as it would bring down initial construction costs along with operating and maintenance fees. d
5. **Engage Towns and Villages.** It would be highly beneficial for the County to seek the involvement of Towns and Villages in this monumental effort as these local municipal governments have a large impact on water quality decisions. e
6. **No grants for new construction.** The plan rightly does not allow for grants to be provided to new construction and it should not allow grants for new construction in the future. f
7. **Test IA's to remove pollutants other than nitrogen**. Research shows IA systems can remove contaminants from personal care products, household cleaners, and pharmaceuticals. Stony Brook Center for Clean Water Technology is reporting important g

reductions for 1,4 Dioxane and PFC contamination in IAs they are piloting. These effects should be studied, and their findings used to update the SWP as it protects the water we drink.

8. **The SWP should clarify strategic sewer options.** The SWP rightly advises for the replacement of cesspools and septic tanks with IA systems. To not encourage additional, unnecessary development, the SWP may clarify plans on where it will advance limited, strategic sewers where IA systems are not feasible, and/or define areas limited to IA installations.

The SWP needs a comprehensive public education campaign. We are already witnessing a misinformation campaign about the science of nitrogen and the grants associated with the septic replacement program. In the public interest, the record should be set straight as follows:

- **The SWP protects homeowners from upfront costs**. Phase II of the SWP is triggered by a dedicated revenue stream. The revenue stream would go toward free incentives, which are already available to homeowners, to cover the upfront costs of installing on-site treatment systems on a voluntary basis.
- **The SWP is based on sound science**. The ecological harm caused by excess nitrogen is undisputed among the scientific community. It is of great public interest that Suffolk County increase efforts to educate the public on the harms of nitrogen pollution.
- **The SWP is reasonably priced**. We need to treat our wastewater. Gravity sewers cost up to 500% more than advanced on-site treatment technology proposed in the SWP. As such, the price of the SWP is in the ballpark for large construction projects like the Tappan Zee bridge ($4 billion), Long Island Power Authority Restructuring Bonds ($4.5 billion), and the Long Island Rail Road, Third Rail ($29 billion).
- **The SWP should discuss homeowner expenses associated with maintaining cesspools and septic tanks**. Currently, the SWP only contains expenses with maintenance for advanced treatment systems. It would better serve the public's decision-making process to compare the maintenance of these new systems with old systems that may require pump outs once or twice a year. In addition, some residents may even add chemical treatment for an additional cost.

Thank you for your consideration and review of our letter. We look forward to partnering with policymakers and partners to help implement the SWP to clean up our water and protect the Long Island way of life for generations to come.

Sincerely,

Adrienne Esposito, Citizens Campaign for the Environment, 516-390-7150, cell 631-384-1378
Kevin McDonald, The Nature Conservancy, 631-329-7689, cell 631-495-0602
Dick Amper, Long Island Pine Barrens Society, 631-369-3300, cell 516-383-5391
Bob Deluca, Group for the East End, 631-765-6450, cell 631-495-0601

The Long Island Clean Water Partnership *is a group of leading conservation organizations who are bringing together scientists, planners, advocates, public officials and concerned community members to address declining water quality on Long Island. Citizens Campaign for the Environment, Group for the East End, Long Island Pine Barrens Society, and The Nature Conservancy work together with nearly one hundred businesses and organizations, as well as thousands of individual members, to protect drinking and surface water throughout Long Island. Learn more at longislandcleanwaterpartnership.org.*